

# **PSYCHOSOCIAL PREDICTORS OF HIV/AIDS RISK BEHAVIORS IN NEPALESE STREET YOUTH**

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## Abstract

**Background:** HIV/AIDS has the potential to become a leading cause of death in Nepal. The around 30,000 street youth here are especially vulnerable to HIV as they share characteristics with and closely interact with higher risk groups. While international studies of street youth have surfaced important demographic, historical, and severity of homelessness predictors, modifiable psychosocial predictors have not been identified in this population. Due to the interpersonal nature of HIV transmission and to the complex intertwined social networks of these youth, consideration of such factors is essential.

**Objectives:** To establish whether modifiable psychosocial constructs independently predict behavioral risk for HIV in Nepalese street adolescents, and to make street- and culturally sensitive recommendations for reducing their exposure to the HIV virus.

**Methods:** Three hundred and seven 15-24 year old street-living, street-working and street-transiting males were recruited from primarily street locations in Kathmandu, Nepal, to complete a closed-ended orally-administered questionnaire.

**Results:** This study captured one of the highest risk sub-groups of street youth in Nepal. Sixty-four percent of sexually active respondents had ever had a known HIV positive, injecting drug using, or commercial sex partner, 56% had ever had anal sex, survival sex, forced sex, or sex while intoxicated, and 78% had had at least one of any of these. Only 30% and 13% reported consistent condom use with commercial and non-regular partners, respectively. Twenty-three percent of youth had ever injected drugs, and of these, 65% had shared needles. Multivariate logistic regression showed area interviewed, older age, history of sexual abuse, longer time since leaving home, higher risk activities with peers, difficulty meeting food needs, lack of connection to an NGO worker, perception that more peers have had sex, less social support, and less self-efficacy to use condoms to all predict HIV risk.

**Conclusion:** In addition to demographic, historical, and severity of homelessness variables, modifiable psychosocial factors were important predictors of HIV risk. These youth's greatly increased risk of exposure may be buffered by social strategies such as preventing risky peer group norms, building bonds between NGO staff and street youth, and facilitating development of their assertiveness and negotiation skills.

## Operational definitions

<b>Acquired Immunodeficiency Syndrome:</b>	The collection of infections that arise with the depletion of the immune system and the decreased ability of the body to fight infection as a consequence of one's infection with HIV.
<b>Cabin restaurant:</b>	A restaurant that is related to a dance bar or massage parlor and which includes semi-private cubicles where women entertain male clients.
<b>Connectedness:</b>	The perception that one is important to a given person and that they care about him.
<b>Commercial sex partner:</b>	Anybody to whom one gives money to for sex.
<b>Forced sex:</b>	Being tricked, threatened or forced to have sex when one does not want to.
<b>Human Immunodeficiency Virus:</b>	A retrovirus that impairs and destroys the function of immune system cells, such as T-cells and macrophages, and ultimately results in AIDS.
<b>Higher risk respondent:</b>	A respondent who shared injection needles, or who had a higher risk type of sex or a partner other than one known to be of low risk, and who reported inconsistent condom use with commercial or non-regular partners.
<b>Injection drug:</b>	A drug that is injected using a syringe and that is not used for medical purposes or for treatment of an illness.
<b>Kawaad:</b>	A collection centre where street youth sell scrap such as metals and plastics to, and where many also spend time at and live in.
<b>Lower risk respondent:</b>	A respondent who never shared a needle, and who either never had sex, who only had sexual partners known to be at low risk, or who reported consistent condom use with both commercial and non-regular partners.
<b>Lower risk sex partner:</b>	A sexual partner who one knows for sure has never sold sex or injected drugs, and is not HIV positive.
<b>Needle sharing:</b>	Injecting drugs with a needle or syringe that has been previously used by somebody else.

<b>Non-regular sex partner:</b>	A sexual partner with whom one is not married to and did not pay to have sex with (includes all other partners than regular and commercial ones).
<b>Protective factor:</b>	A condition or variable associated with an increased likelihood of positive outcomes and a reduced likelihood of negative or unhealthy consequences from exposure to risk.
<b>Ragpicking:</b>	Collecting scrap materials such as metals and plastics for the purpose of selling them back to local collection centers, or kawaads.
<b>Regular sex partner:</b>	One's husband or wife.
<b>Risk factor:</b>	A condition or variable associated with a reduced likelihood of positive outcomes and an increase likelihood of negative or unhealthy consequences from exposure to risk.
<b>Self-efficacy:</b>	One's firm belief of his capability to perform certain actions in order to attain desired outcomes.
<b>Sex while intoxicated:</b>	Sexual intercourse while under the influence of drugs (including dendrite) or alcohol.
<b>Sexual abuse:</b>	The experience of somebody touching one in a place they did not want to be touched or doing something to them sexually which they perceive should not have been done.
<b>Sexual intercourse:</b>	Vaginal or anal penetrative sex.
<b>Social support:</b>	A multi-faceted construct relating to one's social relationships and incorporating guidance, reliable alliance, reassurance of worth, nurturance, social integration, and attachment to others.
<b>Street youth:</b>	Youth who live on the street, work on the street, or transit in the street (spend significant periods of time here outside responsible adult supervision). In this document, the terms street or street-based child, street adolescent, street or street-based youth, and homeless youth are all used interchangeably.
<b>Survival sex:</b>	Sex in exchange for money, food, shelter or drugs.
<b>Victimization:</b>	The experience of being threatened, beaten, robbed, or sexually assaulted.



## **Abbreviations**

AIDS	Acquired Immunodeficiency Syndrome
ARV	Antiretroviral
BSS	Behavioral Surveillance Survey
CI	Confidence Interval
CSW	Commercial Sex Worker
DF	Degrees of Freedom
DHS	Demographic and Health Survey
DoH	Declaration of Helsinki
FGD	Focus Group Discussion
FHI	Family Health International
FSW	Female Sex Worker
FTP	Future Time Perspective
GDP	Gross Domestic Product
GNI	Gross National Income
HIV	Human Immunodeficiency Virus
IDU	Injecting Drug Use / Injecting Drug User
KAPB	Knowledge, Attitudes, Practices and Beliefs
MDG	Millennium Development Goal
NCASC	National Center for AIDS and STD Control
NHRC	Nepal Health Research Council
NLSAH	National Longitudinal Study of Adolescent Health
NGO	Non-Governmental Organization
OR	Odds Ratio
PRQ	Personal Resource Questionnaire
PPP	Purchasing Power Parity
SEA	Self-Efficacy to prevent AIDS
SPS	Social Provisions Scale
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
USA	United States of America
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

# Chapter 1 - Introduction

## 1.1 *Introductory case study*

Bimal<sup>1</sup> is a 30 year old college educated man. He is also infected with HIV.

Thirteen years ago, his mother died, and his father found a new woman within eight days. This new stepmother badly mistreated him and he felt mentally destroyed. Bimal felt like he couldn't even cry because he needed to be strong for his 11 year old sister. During this difficult period of his life, he became attracted to using marijuana to forget his life situation. From this, he went on to using tablets, to cough syrups, and eventually to injection drugs. Although Bimal had food, clothes, and money, it was unmanageable for him to have a stable home, as his life revolved around drugs. He had to quit his job as a teacher, and instead turned to work in the tourism industry, as this way he could maintain his lifestyle by selling drugs to and using them with foreigners.

*“Drugs got in the way of everything in my life”*

Bimal spent the next six years living on the streets of Thamel, the most important tourist area of Kathmandu. Through this time, he tried almost everything he could find, from diazepam and LSD to cocaine and heroin, or ‘brown sugar’. When faced with any decision, drugs always came first. Although clean syringes are cheap (5Rs) and readily available, and although Bimal knew of the health risks of sharing needles, when faced directly with the drug, he expressed a feeling of powerlessness, and would sometimes only wipe the syringe with a bit of saliva before using someone else's needle.

Six years ago, Bimal took an HIV test, and found out that he was HIV positive. For a few days, he felt “totally lost”. After his diagnosis, he stopped sharing needles. After using one, he would immediately break it so that the next person could not use it. Bimal continued to live on the streets for the next four years, where he went through major life crises. He traveled to all parts of India to buy, use and sell drugs. He trafficked hashish to Goa and spent all of his money there. At this time he experienced

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<sup>1</sup> Name has been changed

the elevated brutality of the streets of India, where there is a much higher level of violence than in Nepal.

Eventually Bimal decided that drugs were the overriding problem, and decided to take responsibility for his life.

*“I was a slave. I couldn’t do anything with my own will. It was a miserable life.”*

Two years ago, Bimal became involved with a local rehabilitation centre. The program did not provide any detoxification therapy. He was only allowed occasional treatment with acupuncture to help with the pain. After over a decade of using drugs, it was an immense burden on his body to quit. When he did, he could not sleep for 39 days. He had continuous pain in his body and an immense yearning for the chemicals that his body had become so used to. Every system in Bimal’s body had become used to the drugs, and now every system was fighting their absence.

*“I would never like even the worst of my enemies to go through what I did”*

Now Bimal is living at this same rehabilitation centre and volunteers as a peer educator. He feels very close with everybody there who helped him, and feels like this connection has helped to fill the gap in his life that his family never did. Bimal has decided that he can stop the problems he has faced, with respect to drug use and HIV, for others, before it is too late. In the educational classes he teaches, he openly discloses his HIV status. Bimal has no contact with his father, who lives in the far west of Nepal, but talks occasionally to his sister. Although he believes that some things have improved with respect to Nepalese society and acceptance of HIV, and despite his personal priority of removing stigma and discrimination as related to HIV/AIDS in Kathmandu, he has never told his sister about his drug use or of his HIV positive status.

To date, Bimal’s personal health is very good. He expressed that if one is positive and lives a healthy lifestyle, he can live very well with HIV. Despite knowledge that some things will always be different for him, for example a personal belief that he may never have a wife or family, he expresses a feeling of thorough satisfaction with his current life.

*“If you’re clear in your mind everything else becomes clean”*

## **1.2 Background**

Nepal is a geographically and culturally diverse country. It is also one of the poorest in the world, with almost a quarter of its 28 million people living below the poverty line, and with children under 18, who make up half of the population, being severely affected. (1;2)

Although overall HIV prevalence in Nepal is low at around 0.5%, the epidemic is heavily concentrated in higher risk groups, including 52% prevalence among Kathmandu Valley injection drug users, 2% among Kathmandu Valley female sex workers, and 8% among seasonal labor migrants. (3) The means of transmission are most commonly from needle sharing amongst IDUs and from unprotected sexual intercourse. (3) The threat is imminent for an explosive epidemic, and it has been suggested that HIV could become a leading cause of adult death in coming years. (4) Poverty, political instability, low levels of literacy, child labor and trafficking, stigma, and gender inequality in the country are some underlying contributors to the epidemic. (5)

Street adolescents are at increased vulnerability to HIV as they share characteristics and risky behaviors, as well as closely interact with high prevalence and at-risk groups. (6-10) However, as current street-based HIV projects often focus on IDU, many street youth are not reached, and sexual behaviors are not targeted. (11) Furthermore, two independent HIV tests done by a Kathmandu NGO found that 25 out of 80 tested street-based youth, and 16 out of 32 tested higher risk street-based youth were infected with HIV. [cited in (11)] These facts all support the intuitive conclusion that these youth need to be recognized, prioritized, and provided with appropriate sexual health interventions.

There are approximately 30,000 street-based children in Nepal, of which around 3700 are homeless, and who, as a group, face high rates of morbidity, disability and mortality. (12;13) Imminent problems include poverty, family separation, vulnerability to exploitation and abuse, trafficking, and substance abuse. Their access to education and to health services is disrupted, and they are at risk of mental and physical health issues, including HIV/AIDS. (13) Studies of street youth consistently document high rates of risky behaviors including early sexual initiation, multiple or higher risk sex partners, inconsistent condom use, survival sex, and injection drug use. (11;14-23)

Accounting for the social context is essential in street life, where individual skills and intentions for healthful practices may be undermined by a context that encourages risk. (11;24) Because HIV transmission is interpersonal in nature, inclusion of the social factors that precede, accompany and maintain these behaviors is critical. (25)

Correlational behavioral risk studies amongst street youth have primarily been done in American samples and have been most often limited to demographic, historical, and severity of homelessness measures. (14;17;18) As local contributing factors, culture, and HIV epidemiology differ greatly, (12) research should be extended to this Nepalese context. Furthermore, in a variety of countries, studies have identified psychosocial predictors for HIV risk behavior in non-street youth, including social support, connectedness, self-efficacy, and perceived peer norms. (24-33) Only one study has comprehensively extended these predictors to street youth. (21)

In short, Nepalese street youth are at increased risk for HIV due to a high prevalence of risk behaviors. Factors that reduce this risk, specifically modifiable psychosocial predictors, have not been identified in this population. The identification of these predictors is required for the recommendation of socially-targeted prevention and intervention efforts, and for the ultimate goal of reducing this group's exposure to HIV.

### **1.3 Objectives**

#### **General objective**

To establish whether modifiable psychosocial constructs independently predict behavioral risk for HIV in Nepalese street adolescents.

#### **Specific objectives**

- To develop a profile of street adolescents in this area through a description of demographic, background, and contextual factors
- To report perceived levels of social support and self-efficacy, and to characterize connectedness and peer norms in this population
- To identify selected lifetime and recent HIV/AIDS risk behaviors
- To investigate which demographic, background, contextual, and psychosocial variables independently predict behavioral risk for HIV
- To establish whether psychosocial variables are helpful in explaining HIV risk behavior among populations of street youth
- To recommend contextually-sensitive targeted interventions that can reduce local street youth's exposure to the HIV virus

## **Chapter 2 - Literature review**

### **2.1 Street Youth**

There are ten to one hundred million street youth in the world today. (34) Approximately 30,000 are found in Nepal, and of these around 3700 are also homeless. (12;13) The main Nepalese city for street youth is Kathmandu, where a social mapping two years ago estimated numbers of street-based children here as between 1616 and 2123. (11) Many also live in Pokhara, and an increasing number are found in Terai towns such as Dharan, Narayanghat, Butwal, Biratnagar, (35) and Nepalgunj.

In the international literature, and as used by WHO, the definition of street children includes those up to 24 years of age, distinguishes between children ‘on the street’ (one who sees his family regularly and may sleep at home) and ‘of the street’ (one for whom the street is his only home), includes those who are part of a street family, and accounts for those spending time in organizations or institutions. (34) There has been much debate on adopting a definition that adequately captures the heterogeneity and complexity of this population. (13) An inclusive definition considers those who live with parents or adults part or full time, who have some home or shelter, who work in dangerous or exploitative situations, and who come from homelessness and risk returning to it. (13;34) These children may not all be homeless, but face many of the same risks (such as poverty and lack of adult supervision) as those whose only home is the street. (13;34)

The reasons for children coming to the street are widespread. Some are already separated from their families through armed conflict, natural disasters, HIV/AIDS, or through time spent in institutions. (13) Children can be forced out of the home or can leave voluntarily, for example in response to major life changes (such as parental separation or death of a relative), or to escape disapproval (such as from substance use), family abuse and violence, school pressure, or work demands in the home. (13;34) Some are lured or pulled to the street by the “promise of excitement and freedom” or by reasons such as the availability of drugs. (13;34) However, in developing countries, poverty and migration to rural areas are often the root causes of the ‘street child phenomenon,’ where individual reasons for leaving very often relate back to earning money, either for the youth themselves or for their families. (36)

Although there is no clear profile for a street youth, some descriptions have been given. In developing countries very young children may live on their own. (34) More than 70% are boys, for reasons such as girls being less likely to be abandoned (they show fewer behavioral problems than boys or are instead married off), and as they are more likely to be picked up by the authorities or recruited into legal or illegal work. (34) The disadvantaged situation of these adolescents, for example from limited education, inadequate job skills, and emotional and cognitive instability often makes it essential for them to find informal work in the 'street economy', or deter to the drug trade or to prostitution to meet their basic needs. (18) Many street children in Asia work in occupations such as beggar, ragpicker, shoeshine boy, flower seller, sweat shop worker, sex worker, or petty criminal. (13)

Street youth have high rates of morbidity, disability and mortality. (34) They face major problems such as poverty, family separation, lack of identification papers, labor issues, vulnerability to exploitation and abuse, conflict with the law, lack of recreation, trafficking, migration, and substance abuse. (13) Their access to education and to health-related programs is disrupted. (37) Mental health issues may arise due to individual histories, stigma, a transitory lifestyle, or substance use. (34) Physical health issues include those related to sanitation and hygienic conditions, infectious diseases, nutrition, sexual and reproductive health, and HIV/AIDS. (13;34) These youth will often only seek help for such concerns in crisis situations. (37)

Survival on the street depends on factors such as resourcefulness and resilience, the peer group, presence of exploiters, available protection, and chance. (34) Street youth are not merely a vulnerable population. They have many personal strengths, and their lifestyle leads them to develop negotiation and bargaining skills, competence, knowledge, adaptability, independence, and coping ability. (13;38;39)

## **2.2 *Street youth and HIV/AIDS***

Human Immunodeficiency Virus (HIV) is a retrovirus that impairs and destroys the function of immune system cells, such as T-cells and macrophages. Although symptoms do not usually develop immediately, over time, the immune system is progressively depleted and the body loses its ability to fight infection and diseases, leaving the infected person susceptible to opportunistic infections. Without treatment, these symptoms and infections

generally begin to appear within 8-10 years, and are collectively called acquired immunodeficiency syndrome (AIDS). (40) HIV is present in body fluids including blood, semen, vaginal fluids and breast milk, and therefore can be spread through sexual intercourse, sharing of injecting drug needles, blood transfusions, and from pregnant mothers to their unborn children. Although antiretroviral drugs can slow HIV reproduction and therefore its spread to healthy body cells, to date there is no cure for AIDS. (40) Despite very few AIDS cases being reported amongst young people, due to its long incubation period, many adults developing AIDS were likely infected in their youth. Currently there are an estimated 33 million adults living with HIV, and every day over 6800 more people become infected. (41)

Street youth are at risk for HIV due to contextually-related reasons such as coerced or forced sex, sex tourism, and survival sex. (13;42) These youth often already have a fragile health status and have a decreased ability to fight infection, which increases their risk in an environment where HIV spread is already facilitated. (42) HIV rates have been reported as higher among street youth even when compared to disadvantaged out-of-school youth. (43) Although these higher seroprevalence rates have been reported among North American homeless youth, (17;44;45) there is little corresponding data for street children in South Asia, due to their lack of stable domiciles, and as this group is not separated out of data for 15-24 year olds in national surveys that use probability sampling. (42;46) Still, two independent HIV tests done by an NGO in Kathmandu found that 25 out of 80 tested street-based youth, and 16 out of 32 tested higher risk street-based youth were infected with HIV. [cited in (11)] Despite the shortage of empirical data regarding HIV infection, because the reasons for street youth's increased vulnerability to HIV overlap substantially with groups considered to be at high risk, such as migrants, refugees, and young people in general, (6;8;9;47;48) and because street adolescents closely interact with, and share some of the risky behaviors of 'core transmitter' groups such as sex workers and injection drug users, (7;42) this group is in clear need of recognition and of appropriate interventions.

## **2.3 Behavioral determinants of HIV/AIDS**

Behavioral determinants include individual factors, the social, emotional, and physical context, as well as the differences in relationships, settings, cultural rules and



expectations, and economic conditions that can all influence or underlie behaviors directly associated with HIV transmission. (49;50) These factors clearly cover an enormous range of potential variables, and can be unclear, unformulated, and changeable over time. (49)

The theoretical literature in health psychology often uses social-cognitive theories to explain HIV-risk behavior. For example, while Becker's Health Belief Model incorporates susceptibility, perceived severity, perceived benefits, and perceived barriers into its model, (51) the revision of the Theory of Reasoned Action, the Theory of Planned Behavior, (52) considers attitude, subjective norms, perceived behavioral control, and ultimately intention. Overall, they consider behavioral, personal, and interpersonal factors and processes that lead to beliefs and subjective evaluations, and therefore engagement in certain behaviors. (53) Some examples in the context of a health risk include the ability to protect oneself from it, confidence in changing behavior that could control it, perceived social norms and attitudes towards it, and the emotional and social costs, benefits and consequences related to its outcome. (53) Although these frameworks have been successfully used in industrialized settings, care needs to be taken when employing them in developing ones. For example, in addition to personal factors (knowledge, perceived risks, costs, and benefits, self-efficacy and self-esteem) and the proximal context of one's social and living environment (negotiation skills, exposure to coercion, peer and adult influences, living conditions, and available services and resources), we need to consider real distal factors in one's cultural (traditions, norms, beliefs and values) and environmental (laws, politics, economics) setting. (53)

Still, the psychosocial factors these theories draw are both significant and important, due to their ability to explain significant amounts of variance in HIV risk in adolescents, and because they are modifiable. (31) The social context is essential to account for the reality of street life, where individual skills, positive attitudes and good intentions for healthful practices may be undermined by a context that encourages behavioral risk. (24)

**Risk factors for HIV:** "Conditions or variables associated with a reduced likelihood of positive outcomes and an increase likelihood of negative or unhealthy outcomes", in this case the "probability that adolescents will engage in sexual-risk taking or be exposed to HIV". [cited in (50)]

**Protective factors against HIV:** "Have the reverse effect: they increase the likelihood of positive outcomes and reduce the likelihood of negative consequences from exposure to risk". [cited in (50)]

### **2.3.1 Demographic, background, and contextual factors**

Basic individual factors are associated with variations in HIV risk. For example, studies of street youth have found positive correlations of age with deeper involvement in the street economy (for example through survival sex and IDU), with decreased likelihood of using condoms with multiple and main partners and at last sex, and with higher scores on an HIV risk index. (14;17;54) However, Nepalese street youth aged 12-14 were significantly less likely to use a condom at last sex than their older peers. (11)

In Nepalese culture, marriage might be a protective factor against HIV risk, as it often occurs early, and as extramarital sex and divorces are rare. (55) The median age of first marriage for Nepalese women is 17 years, while men tend to marry around three years later. (46) Ten percent of 15-19 year old men and 56% of 20-24 year old men are married, and 98% of married men report having been faithful to their wives in the 12 months preceding the study. (46;55) In a multivariate analysis of street youth in Nepal, the small proportion of ever-married street boys was significantly less likely to be involved in high risk sexual behavior than those who had never been married. (11)

Ethnicity is important, and is sometimes seen as a proxy indicator for factors such as socioeconomic status and cultural norms. For example, an American study of publicly-housed minority children aged 14-15 showed that their rates of sexual activity were comparable to those of 18-19 year olds in national surveys. (24) This variable is important in Nepal, where the caste system persists, and where depending on location and gender, those from a marginalized caste background represent up to 47% of street children. (11)

Education is important, for example as youth with fewer years of schooling may be less likely to use condoms and may have a greater number of casual partners. (9) Among boys in a study of Zambian youth, higher levels of education were protective of sexual experience, having more than one recent sex partner, and inconsistent condom use, while current school attendance predicted fewer lifetime sexual partners and consistent condom use. (30) In Nepal, while 75% of street boys had ever been to school, only 7% of boys were current attendees, with the principal reasons for non-attendance being economic or distance related. (11)

Knowledge of HIV transmission and prevention has previously shown protective of risk behaviors. (30) However, as a multitude of studies have challenged this relationship,

(21;24;31;32;56;57) the variable is now more often seen as a prerequisite for adopting HIV related safe-sex behavior. Rejection of associated misconceptions is also important as it influences behavior. For example, if one believes that HIV is spread by mosquito bites, he might feel that his sexual well-being is outside his control, and may be less likely to adopt healthful practices. Or, if a youth believes a healthy-looking person cannot have HIV, he may wrongly feel that condom use in that particular sexual encounter is unnecessary. In Kathmandu street boys, despite the high prevalence of risk behaviors, that than three in four had heard of HIV/AIDS, and that nine in ten of these youth agreed that it could be spread through unprotected sexual intercourse and by sharing needles, only 43% were worried about getting AIDS, many held misconceptions, and 32% of boys did not think or did not know of any way one could protect himself from the virus. (11)

The reason for leaving home is another factor that may influence these youth's future exposure to risky sexual situations. For example, youth who left because of childhood sexual abuse may be more vulnerable to subsequent abuse on the streets. (58) In both homeless and non-homeless youth, and especially in females, a history of sexual abuse has been associated with such factors as early sexual debut, unprotected sexual intercourse, multiple sexual partners, engagement in anal sex, teenage pregnancy, involvement in sex work, higher rates of STDs, sexual revictimization, and higher scores on HIV risk indices. (17;18;23;58-61) In Nepal, the most common reasons for leaving home amongst street-living children were domestic violence, at 28%, and poor economic condition, at 18%. (11)

A longer time spent on the street may lead to deteriorating economic and social resources over time, resulting in increased integration into the sex- and drug-related street economies and migration to higher risk environments to meet basic needs. (17) Over time, street youth can become more alienated from traditional social life, which can make it difficult for them to reintegrate into society. (13) In Kathmandu street-living boys, 72% had left home by 12 years of age, and 64% had lived there more than one year. (11)

Current family contact has not been well-documented in the correlational literature amongst street youth. However in non-street Peruvian boys, those who did not live with either of their parents were less likely to use condoms at first sex than those who lived with both. (32) Furthermore, the around one in three sexually active Nepalese street-based boys who were living with family were significantly more likely to have used a condom at last

sex than those who were not. (11) As street children are often excluded from the protective effects of parent availability and monitoring of their activities, (62) continued parental contact may be indicative of more positive relationships, and may therefore be protective against HIV risk.

Through the adolescent years, peers hold increasing influence over family in everyday lives. (63) Congruent with Problem Behavior Theory, which suggests that risk behaviors tend to cluster together, (64) both direct (actual or perceived sexual) and indirect (general deviant non-sexual) peer attitudes and practices should influence adolescent's risky sexual behavior. Accordingly, Metzler et al. (62) found that the extent of association with deviant peers, for example in terms of their cigarette, smoking and drug use, as well as some cheating, stealing, and violence-related behaviors, was the largest direct predictor of risky sexual behavior in adolescents, over various family-related variables.

Participating in or being exposed to exploitative situations can increase risk for HIV. WHO states that these situations affect street children, for example through violence and injuries from such people as police, gangs, drug syndicates, commercial sex business operators, sexual partners, families, and other children. (34) Similarly, consistent with an empirical study of African street children, those in South East Asia have been said to be exposed to exploitative or risky experiences, such as comfort sex, initiation sex of newcomers, and sex for power or punishment. (34;65) A study in Nepal showed that 5% of Kathmandu street boys' first penetrative sexual experience was either tricked or forced, and reported that 41% of street boys felt peer pressure from their friends to have sex. (11)

Next, the continuum along which street youth use services, including drop-in centers and overnight shelters, may be indicative of their level of risk. American studies have estimated that 65% of youth had not used an overnight shelter, and that 25% had never attended a drop-in center. (14;19) In Nepal, a large number of youth had not had any contact with an organization in the last year, and of those who did, less than 30% had discussed HIV/AIDS or condom use. (11) The most vulnerable populations, such as IDUs, may be even less likely to use these services due to fear and distrust. (20) Therefore, service-users may be a sub-population of street youth who are seeking a stable environment, and who are at lower risk for HIV. (14)

Variables reflective of one's living conditions, including ability to meet one's basic needs, can greatly influence healthful practices. South-African studies of non-street adolescents have shown that poverty, unemployment, and overcrowding are associated with higher rates of sexual activity, and more engagement in survival sex. (53) One study of Washington street youth found that higher scores on an HIV risk index were predicted by severity of homelessness variables including spending the night in a public place, sexual victimization, support from illegal activities, going hungry (for males), and ever staying with a stranger and being thrown out (for females). (17) Similarly, higher scores on a similar HIV risk index in another American study was independently predicted by being interviewed on the street instead of shelters, and having unmet needs. (18)

Finally, perceived problems and priorities are related to the literature on Future Time Perspective, (66) which is not specifically measured in this study. Many behaviors related to HIV are time-related (e.g. obtaining condoms in advance and planning negotiation of sex) therefore long-term consequences of these behaviors are weighed against potential short-term benefits. (66) This is not merely a measure of an individual putting himself at risk, but relates to his complex interaction with his environment. For street children, their unsafe surroundings, and their struggle to fulfill basic needs can result in a lack of concern for health risks, a lack expectation in the future, a careless attitude toward danger, and a desire for instant gratification. (18;42) Accordingly, Tanzanian street children qualitatively reported that their precarious living on the street required prioritization of immediate threats such as hunger and violence over the more "inconsequential and distant" elements of HIV/AIDS. (65)

## **2.3.2 Psychosocial factors**

### **2.3.2.1 Connectedness**

Connectedness has been defined as "consistent, stable, positive, emotional relationships with such significant others...who can provide children with important social skills and a sense that the world is safe and secure." [cited in (67)] In short, it reflects one's belief that people in his social environment care about him. (68) Positive relationships with families, peers, schools, and communities can support and influence sexual health practices. (48) School connectedness has been linked to more emotional well-being and better health,

as well as less drug and alcohol use, sexual behaviour, depressive symptoms and suicidal ideation, violent or deviant behaviour, and teen pregnancy. (69;70) Youth whose environment provides and supports meaningful relationships, self-expression, structure and boundaries, may have later sexual initiation, less depression, and less drug use. (32;48;50) Although street youth are often excluded from school and parental connectedness, their intertwined social networks include relationships with family, peers, mentors, community workers, employers, hotel owners, police, and kawaad owners. (11)

With regard to parents, a study of publicly-housed children showed that increased parental monitoring was associated with lower levels of sexual activity, although no relation was found to condom use. (24) A study of vocational students in Thailand also found that earlier sexual initiation was associated with parents who did not live together for males, and not having a family member as a confidant for females. (29) Finally, a study of 10-19 year old sexually active Zimbabwean students also considered the “multiple ecological levels” of individual, family, peer, and community contexts as they relate to HIV risk. In this study, boys who said that their parents were there when they needed them were more likely to have consistent condom use practices. (71)

With respect to peers, the correlations are often found in opposite directions. The same study in Thailand showed that having a close friend as a confidant predicted sexual experience in males. (29) Also, a study of Zambian youth showed correlations between number of friends, engaging in higher risk activities with their best friend, and number of lifetime sexual partners. (30) Finally a study measuring the extent that grade nine students reported social activities with their peers found it to be a predictor of sexual experience and of higher HIV risk. (31)

Finally, the relationship with staff at NGO centers is included as these adults have the potential to make up for some of the connectedness that street youth lack. Because the social networks of street children often exclude close relationships at home and at school, organizations may be the only ‘adult’ source for them to ask questions and to receive information about the multitude of sexual issues they face through adolescence.

### **2.3.2.2 Perceived peer norms**

In addition to influences such as the media and cultural expectations, one's perception of his peers' sexual activity, irrespective of their actual behaviors, can influence HIV-related behavior. (72) Early and unprotected intercourse is more likely in youth who consider this behavior to be accepted and common in their environment. (34;72) A study of Zambian youth showed that knowing that peers had had sex predicted increased likelihood of being sexually experienced and of having a higher number of lifetime partners. (30) Similarly, a study by the same first author in Peruvian adolescents demonstrated strong effects of perceived and actual peer behavior on multiple risk outcomes. (32) In contrast, a study of 9<sup>th</sup> grade students showed that students who believed their friends thought more about engaging in preventative health were more likely to have used condoms in the last month. (31) In Nepalese street children, the majority believed that at least half of their peers were sexually active. (11) Generally accepted conclusions in the literature are that if an adolescent believes his friends are sexually active, he is more likely to have had sex himself, and if he perceives that his friends use condoms, he is also more likely to do so himself. (24;25;32;53;72)

### **2.3.2.3 Social support**

Social support is a multi-faceted construct that, despite numerous measures and definitions, usually includes such aspects as emotional sustenance, affirmation that increases self-esteem, perceived available resources, and tangible assistance received. (25) For example, positive role models can protect adolescents from harm, and can facilitate access to assets such as financial and work opportunities. (73) Social support has been described as a "critical function of the social network". (74)

Perceived social support has received much attention in the literature with respect to stress, help-seeking behavior and health maintenance and outcomes, (75) but has also been associated with positive health practices and a lower incidence of risk behaviors. In one study, where unfortunately scale items were not described, perceived social support predicted lower HIV risk index scores. (31) Second, a study of 295 African-American health service attending adolescents found that less social support was related to higher HIV risk including more casual sex, multiple non-monogamous partners, sexual coercion and

STDs. In males it was also related to inconsistent condom use and increased number of sexual partners. (25) Finally, Rew's study showed social support to be a direct path to sexual self-care behaviors. (21)

#### **2.3.2.4 Self-efficacy**

Self-efficacy represents one's firm belief of his capability to perform certain actions in order to attain desired outcomes. (37) A young person who feels in control over his own sexual decision making, for example through the ability to refuse unwanted sex, or to demand the use of a condom, is more likely to attempt these behaviors, and therefore may be more protected against various HIV/AIDS risk behaviors. (50;53;76) As self-efficacy has been said to mediate between knowledge and action, it has been much studied as an explanation for the failure of knowledge to predict behavioral risk in traditional KABP studies. (33;37)

In a study of 15-24 year old in and out-of-school Ethiopian youth, (26) self-efficacy to acquire and use condoms, was strongly correlated to intention to use condoms. Similarly, a household survey of sexually-active young Ghanaian men found that high perceived self-efficacy was the strongest predictor of ever using a condom, especially among those who also perceived low barriers to condom use. (27) Another study measured this as the extent to which students perceived their ability to avoid STDs and HIV with respect to confidence in their ability to ensure condom use at each sexual encounter, and found it to be a significant predictor of a lower score on their HIV risk index and of increased condom use in the last month. (31) Furthermore, a study done in Cameroonian youth included concepts of negotiating condoms, obtaining them, and using them correctly in their operationalization of self-efficacy, and found this to be a predictor of increased condom use. (28) In Nepal, although two in three Kathmandu street boys planned to use a condom at next intercourse, only 53% perceived themselves able to use a condom at every sexual encounter. (11)

### **2.4 HIV/AIDS risk behaviors**

A risky sexual behavior "is one that increases the likelihood of adverse sexual and reproductive health consequences...[including] unwanted pregnancy, unsafe abortion, HIV/AIDS and STDs." (34) Risky behaviors, primarily related to sexual activity, but also



for example through needle sharing among IDUs, both directly and indirectly affect the spread of HIV. Studies of homeless adolescents consistently document high rates of such practices. (11;14-23)

#### **2.4.1 Early sexual debut**

Early sexual debut is associated with greater risk of bullying and exploitation, with the greater possibility of concurrent, multiple, or high risk partners, with the shorter and less formal partnerships between youth, and with the greater total amount of time spent in these types of relationships. (50;57) Younger adolescents are also less likely to have the information, skills or services required to make health promoting choices. (9) In a Nepalese study, 57% of Kathmandu street boys had had sex before the age of 15. (11)

#### **2.4.2 Unprotected sex**

Sex without a condom may be the most important sexual risk behavior as it provides a direct means for HIV transmission. As condoms are highly effective against HIV transmission during sexual encounters, (77) their correct and consistent use can substantially decrease risk, even in situations involving higher risk partners or risky types of sex. In Nepal, only one in four Kathmandu street boys used a condom at first intercourse, and only 35% used one at last intercourse. (11) Despite most of these youth knowing about condoms, data suggested that many were either using them incorrectly, or not at all, for reasons such as not having one, decreased sensation and enjoyment, and poor fit. For these boys, situations with the lowest reported levels of condom use included first sex, sex with a non-regular partner, and anal sex.

#### **2.4.3 Higher risk partners and multiple partners**

As condoms are not 100% effective, and as studies suggest they are usually not used consistently and correctly, (11;66;78) other risk behaviors are also important. Epidemiologically, the likelihood of contracting HIV is also related to such factors as HIV prevalence in the population and the number of times HIV transmission is possible. (79) Therefore, factors such as frequency of intercourse, number of partners, sex with high risk groups, and sex with persons of unknown status should be considered. (78) In Nepal, 72% of sexually active Kathmandu street boys had ever had sex with a non-regular partner, 41%

had done so in the last month, and one in three had had two or more sexual partners in this time. (11) If one's partner is more likely to have HIV, such as an IDU or CSW, a greater risk of exposure exists.

#### **2.4.4 Higher risk sex**

Certain types of sexual acts increase the probability of HIV transmission, as they are related to increased risk for contact with blood, semen, or vaginal fluids. (78)

Transmission of HIV through anal sex has been reported to be 10 times higher than by vaginal sex, and therefore provides a direct physiological risk for HIV. (40) Both consensual and exploitative anal sex has been documented in geographically different populations of street youth. In Tanzania, same sex activity among street youth was not seen as real sex, was connected to decreased condom use, and was seen as safe, as some street children believed AIDS could only come from females. (65) In Nepal, 28% of sexually active Kathmandu street boys reported ever having had anal sex, of which 16% used a condom the last time. As in Tanzania, here, it was sometimes consensual and sometimes non-consensual, and was qualitatively described as a sort of game played amongst younger boys. (11)

Second, along with the associated physical and psychological consequences, exposure to coerced or forced sex is a risk for HIV infection, for example due to the cuts and tears that may result from the experience, and because the associated power discrepancies frequently result in it being unprotected. (34;48;53) Street children indulge in or can be exposed to stressful and risky experiences, such as comfort sex, initiation sex of newcomers, and sex for power. (34;65) Each of these is associated with exploitation and potentially violence, and therefore increased risk for HIV. (34)

Another act which often holds a coercive component is commercial sex. This type of sex presents risk for both the client and the CSW, in part because of high rates of partner change. (50) Amongst street youth, this type of sex may not be as explicit as the reception of money, but can be in the form of 'survival sex', where it is exchanged for commodities such as money, food, shelter, protection, or drugs, in order to meet basic needs. (34;37;53) One qualitative study of street children in South Africa evoked their assertion that selling sex was the best way of making money on the street, and that it was normally required to be

unprotected. (36) In Nepal, many boys risk becoming infected with HIV as they report both their first and last sexual experience being with a CSW, as well as being unprotected. (11) From the same study, 28% of sexually active Kathmandu street boys reported ever having had sex in exchange for money or gifts such as alcohol.

Finally, drug and alcohol use can lead to overdose, increased number of accidents, and medical complications. In the NGO literature, sexual activity while intoxicated is frequently cited as a risk for HIV/AIDS as it is more likely to be unplanned, decisions regarding condom use are influenced, and the likelihood of the use of force is increased. (34;50) In varying populations of youth, drug use has been associated with multiple sex partners and unprotected sex. (48) For example, amphetamine use in South East Asia has been said to have an indirect effect on HIV as it “predisposes users to risky sexual activity by engendering a feeling of bravado, invincibility and a tendency towards reckless behavior including a careless attitude towards safer sex practices.” (42) Similarly, sniffing glue has been linked to earlier sexual encounters and a casual attitude toward condom use. (42) However, the scientific literature does not always support these statements. For example, studies have shown all of negative relationships between HIV risk and drug use, no effect, and positive relationships, which may be explained by confounders or by methodological differences such as outcome chosen and type of substances included. (15) For example, one study of street youth in Washington, DC, suggested that motivation by HIV to use a condom was not tempered by the effects of marijuana or crack. (15) However, in Nepal, street children who had had sex under the influence of alcohol or other drugs were significantly more likely to have engaged in higher risk sex. (11)

#### **2.4.5 Needle sharing**

The sharing of injecting equipment between IDUs is a direct risk for HIV transmission. Of 6% of youth who had injected drugs in a study of homeless adolescents in Chicago, three quarters of them, after attempting to clean them, had shared their needles with an average of just less than 4 other people. (18) In another study, of the 30% of the sample who had ever injected drugs, 58% reported sharing needles. (19) The special vulnerability of IDUs was shown in a Californian study in which 44% injected the last time with a needle used by somebody else, that their daily activities revolved around getting and

using drugs (sometimes at the expense of basic needs), and that these youth had more traumatic psychosocial histories, such as parental substance abuse and forced institutionalization, use of alcohol and other drugs, and survival sex, than non-IDUs. (20) In Kathmandu, 7% of street youth aged 12-17 had ever injected a drug, and of these 53% of the boys had done so in the last month, and 60% had shared needles. (11)

## **2.5 Nepal**

Nepal is a geographically and culturally diverse country. It is also one of the poorest in the world, with a per capita GNI (PPP) of 1530 international dollars, and with 24% of the population living below the poverty line of US\$1 per day. (2) The country is landlocked between China and India. Its total area of 147,181 square kilometers, which is approximately the size of England, houses 28 million people. (1;80) Infant mortality is 56 per 1,000 live births, maternal mortality is 740 per 100,000 live births, and the fertility rate is 3.5 per woman. (2) Life expectancy is 63 years for males and 64 for females. (1) Sixty-three percent of men and 35% of women are literate. (1) Kathmandu is the capital and largest city in Nepal, with a population of 800,000. (81) Overall, around 5% of the population live in the Kathmandu valley, which make up some of the only 17% of the Nepalese population living in urban areas. (1;81) Seventy-six percent of Nepalese people rely on agriculture, which makes up 40% of the GDP. (81) Exports include grains, carpets, clothing and jute. (81) The official currency is the Nepalese Rupee.

Nepal is divided into 5 regions, 14 zones, and 75 districts. (46) The geographic diversity of the country is clearly demonstrated in the variation between North and South Nepal, where over a span of only 193km, five climactic zones, from Arctic to Tropical, are encompassed. (46) The northern region boasts the spectacular Himalayan range, which includes eight of the ten highest peaks in the world, including the highest, Mount Everest, at 8848m. The middle of the country is the Hill region, which includes valleys, rivers, and the major cities. Finally, the southern Terai region consists mainly of humid plains, at as low as 90m elevation, which is rich with jungle, and which has many wildlife reserves and national parks. (46) The country is susceptible to natural disasters such as earthquakes and floods. (46) The monsoon season lasts from June to August.

From 1996-2006, internal conflict between Maoist and government forces caused around 13,000 people to lose their lives, and has resulted in the breakdown of communities, infrastructure, and basic services. (82) Currently, Nepal is in a period of transition, and has elected a constituent assembly who will draft the country's new constitution. The resolution passed by this government of converting the previous monarchy to a federal democratic republic should be ratified at this assembly's first meeting.

Ethnically, a Nepalese census identified 103 ethnic groups, and 92 mother-tongues in the country. (46) The official language is Nepali, which is widely understood and spoken by Nepalese people of many ethnicities. While over 80% of the population is Hindu, Buddhism is also common, at 11%, and the two religions coexist peacefully. (46) The most common food eaten in Nepal is called dal-bhat, which consists of rice, lentil soup, and curry, and is eaten by many Nepalese people twice per day. (81)

## **2.6 HIV/AIDS in Nepal**

Nepal's National Center for AIDS and STD control (NCASC) is a branch of the Ministry of Health and Population that works with HIV/AIDS. (46) Since the first reported AIDS case in Nepal, in 1988, two Strategic Plans for HIV/AIDS have been initiated. Activities from these plans have included screening donated blood samples, developing and maintaining comprehensive monitoring and evaluation systems, surveillance, initiating VCT centers for testing and counseling, producing educational, informational and communication materials, promoting condom use, providing ARV care for persons living with AIDS, and providing relevant clinical training to health workers. (46) The five priorities identified in Nepal's National AIDS strategy 2002-2006 were to prevent HIV and STI infection among vulnerable groups, to prevent new infections among young people, to ensure the availability and access of care and support services, to expand monitoring and evaluation frameworks, and to establish a management system for an expanded response to the epidemic. (3)

Empirically, by the end of 2005, 5,828 actual cases of HIV infection, and 959 cases of AIDS had been reported by the Ministry of Health. (3) Since then, cases have almost doubled, with figures from the NCASC to mid-March 2008 reporting 11,002 cumulative HIV cases, including 1709 AIDS cases in Nepal. (83) It is estimated that the actual figure of HIV-infected people is around 70,000. (46) This discrepancy is due to reduced medical and

public health infrastructure, as well as to the lack of comprehensive surveillance systems. (3;46)

Although overall HIV prevalence in Nepal is relatively low at around 0.5%, the epidemic is heavily concentrated in higher risk groups, including 52% prevalence among Kathmandu Valley injection drug users (IDUs), 2% among Kathmandu Valley female sex workers (FSWs), and 8% among seasonal labor migrants. (3) The means of transmission are most commonly from needle sharing amongst IDUs and from unprotected sexual intercourse. (3) The threat is imminent for an explosive epidemic, and it has been suggested that HIV could become a leading cause of adult death in coming years. (4) Poverty, political instability, low levels of literacy, child labor and trafficking, stigma, and gender inequality in the country are some underlying contributors to the epidemic. (5)

The HIV epidemic in Nepal has the potential to follow the course as seen in many countries, where prevalence increases in vulnerable groups, and is later bridged to the general population. (3) The threat is imminent for an explosive epidemic, and it has been suggested that HIV could become a leading cause of adult death in coming years. (4) Over the next ten years in the 15-49 year old population, prevalence may increase to 1-2% meaning up to 200,000 young people would become infected. (3) In order to prevent the development of this epidemic to a generalized one, the country is heavily focusing on high risk groups, with 75% of the total national HIV budget aimed towards prevention, either through government or NGO partners. (3) Despite the fact that street youth overlap with all of these groups, they are not explicitly named or targeted for national intervention. However, they are now recognized as an ‘emerging priority group’. (3)

## **2.7 Quantifying HIV risk**

Despite the numerous studies of HIV and its related behaviors, no ‘gold-standard’ for measuring HIV risk exists in the literature and a great diversity of measures are found between studies. (79) This makes it difficult to compare results between them, as it can be unknown whether effects found are due to the way the variables were operationalized.

Perhaps the most commonly used measure is one of frequency of condom use. Although this is simple and practical, it can be insensitive. For example, one who reports using condoms sometimes may use them anywhere from 1-99% of the time, and depending

on this figure, will have a different actual risk. (79) Other used simple outcome variables are ever had sex and number of sexual partners. (29;57)

Alternatively, some researchers have built composite indicators of HIV risk, which can account for interrelated behaviors. For example, Hale used one that compiled combinations of multiple partners, inconsistent condom use, and IDU into five levels of risk. (33) Also, a safe sex composite indicator used by WHO in national HIV/AIDS prevention programmes for young people combines ever had sex, sex in the last 12 months, more than one sexual partner in the last twelve months, and condom use at last sex into six levels of risk. (50)

One measure which is often used in studies of street youth is an HIV risk index. (17;18;31) This consists of a list of risky behaviors for which the participant is attributed one point for each behavior that is relevant to him. For example, Johnson (18) included irregular condom use as a risk, and gave participants a tallied score of 0-7. This measure accounts for many of the above condom use weaknesses, is appropriate in populations with a high prevalence of risk behaviors, and is capable of including a wide range of variables. One major setback to this is that it weighs risk equally. For example in one study, never using a condom and drinking at last sex, two behaviors which present different actual risks for HIV, were considered equal criteria for categorizing respondents into the higher risk group. (17) The second is that the compilation of behaviors limits sensitivity and specificity, for example as to type of act and as to whether sex with a high risk partner is protected at a given occasion.

Another tool for measuring risk for HIV is the use of a standardized questionnaire. For example, the Safe Sex Behaviors Questionnaire, which is a standardized survey of 27 questions in 4-point Likert format, has been used in studies of homeless and non-homeless youth. (21;84) It is unique as it is positively framed, includes many ways one can protect himself from risk, and is a valid and reliable measure that permits comparison between studies. (21) Some problems are that it asks about hypothetical instead of actual behaviors, that it is not specific to street culture (for example where IDU is the most effective means of HIV transmission and where survival sex is common), and that it does not consider respondents baseline risks before adopting protective behaviors.

## **2.8 HIV/AIDS interventions**

As there is no cure for AIDS, prevention offers the greatest hope for its control. (15) Although past research emphasizes the complex interconnectedness among personal, family, school, and community factors that influence risk behaviors, this should not be discouraging to intervention efforts, as targeting one of many chosen risk factors can improve health outcomes. (70)

Over the years, interventions, which aim to promote healthy sexual behavior in adolescents, have developed from the provision of knowledge, to a focus on values and decision-making skills, to an emphasis on abstinence, and finally to an integrated approach. (37;85) This combination, as well as with the development of support systems, is much more effective in promoting positive practices than information alone. (37) UNICEF's 10 steps to defeating AIDS include providing knowledge, life skills, youth-friendly health services, voluntary and confidential HIV counseling and testing, and safe environments, as well as having considerations for high risk youth, measures to combat stigma, and collaborations with uninfected and infected young people in intervention efforts. (48) Similarly, UNAIDS recommends culturally-sensitive interventions that include young people as peer educators, and that inform adolescents about HIV/AIDS, that teach negotiation skills, and that provide solutions for dealing with peer pressure and threatening situations. (9) These modern intervention efforts, which are more theoretically-based and have been empirically evaluated, have yielded encouraging results in improving knowledge, attitudes, and safe-sex behaviors. (37)

Unfortunately, street adolescents are not often reached by these programs, as they are often integrated into school systems. Even if they are reached, they can be less relevant to street adolescents own needs. For example, inherent assumptions, such as continuity of contact in service provision, social support from families and communities, and adequate levels of literacy, may not hold. (37) The development of culturally-sensitive interventions to encourage health-promoting sexual behaviors among street adolescents is challenging as scientific descriptive research in this population is limited, and because the empirical study of implemented programs is difficult. (37) Also, because street youth in developing countries sometimes suffer less poverty and abuse, obtain greater nourishment and lead an increased quality of life than they would have had at home, in foster care or in institutions,



interventions that intend to promote the best interest of the youth are complicated. (13) The preferred approach is holistic and has a focus on children's rights. The preferred approach is holistic and has a focus on children's rights. Some examples of successful interventions with street youth have actively involved the youth themselves, and have focused on preventing family violence, ensuring adequate street-outreach, ensuring access to health and education, preventing movement to high-risk environments, protecting youth from risk and exploitation, developing life skills, providing protection and training, and facilitating reintegration. (13)

## **2.9 Summary of previous research**

The international literature has steadily established important psychosocial predictors of HIV risk behavior, including social support, connectedness, self-efficacy, and perceived peer norms. (24-33) These factors are important as they can account for one's social context, which has been said to be essential for the prevention or modification of risk behaviors. (78) Also, because HIV transmission is interpersonal in nature, the inclusion of proximal social factors that precede, accompany and maintain HIV risk behaviors is critical. (25) Finally, their consideration is imperative in street life, where individual skills and intentions for healthful practices may be undermined by a context that encourages risk. (11;24) However, as such studies have been done primarily with in-school and at-home youth, they therefore represent a greatly different population than that of street youth in general, and more specifically, of street youth in Nepal.

As referred to throughout this chapter, many descriptive studies have been carried out amongst street youth in a variety of global contexts, and have consistently documented high rates of HIV risk behaviors. (11;14-23) However, the correlational literature, as it relates to behavioral risk for HIV, has been most often performed in samples of American homeless youth, and predictors have been generally confined to background, historical, and contextual variables, such as severity of homelessness measures. (14;17;18)

Only one study has comprehensively extended psychosocial predictors to street youth. Rew et al. developed and used a model of sexual health practices among homeless youth. (21;37) Their questionnaire included demographics, sexual history, and culture of homelessness sections, as well as the cognitive-perceptual constructs of knowledge of STIs, future time perspective, social support, connectedness, perceived health status, self-efficacy

to use condoms, and intention to use condoms. Although somewhat low reliability was reported in some second-half instruments, likely due to the questionnaire length of 201 questions, this study incorporated valid psychometric tests, and was both comprehensive and practical for future interventions. Mean scale values were also reported which facilitated comparisons. Path analysis of their data from 414 Texan homeless youth showed that direct paths to safe sexual behaviors were future time perspective, intentions to use condoms, and self-efficacy to use condoms.

Only one study in Nepal has investigated predictors of HIV risk amongst local street youth. ‘Knowledge, attitudes, practices and beliefs in the context of HIV/AIDS among out-of-school street-based children in Kathmandu and Pokhara’ was performed by Child Welfare Scheme, SathSath, and UNESCO in 2006. (11) The findings of this study were congruent with KAPB studies in other populations of youth: basic knowledge of HIV among street children was relatively high, although common misconceptions existed, but this did not translate into safer behaviors. FGDs with street youth yielded findings that sexual activity in this population put children at high risk for HIV, as it included survival sex, forced or coerced sex, sex with non-regular partners, and sex with higher risk partners such as CSWs. Quantitatively, 79% of Kathmandu boys, and 36% of Kathmandu girls who were sexually active had engaged in one or more forms of higher risk sex (anal sex, sex with non-regular partners, or sex with a partner involved in CSW). Predictors of this variable were never been married, not being involved in ragpicking, and ever having had sex under the influence of drugs or alcohol. Predictors of condom use at last sex were older age and living with family.

Clearly, there is an important gap in the international literature with respect to the relationship between psychosocial predictors and HIV risk behaviors amongst street youth world-wide. Further understanding of the intercorrelated roles of risk factors, protective factors, and HIV/AIDS risk behaviors is essential for developing targeted prevention strategies that can result in decreased exposure of this vulnerable group of Nepalese street youth to the HIV virus.

## **Chapter 3 - Methodology**

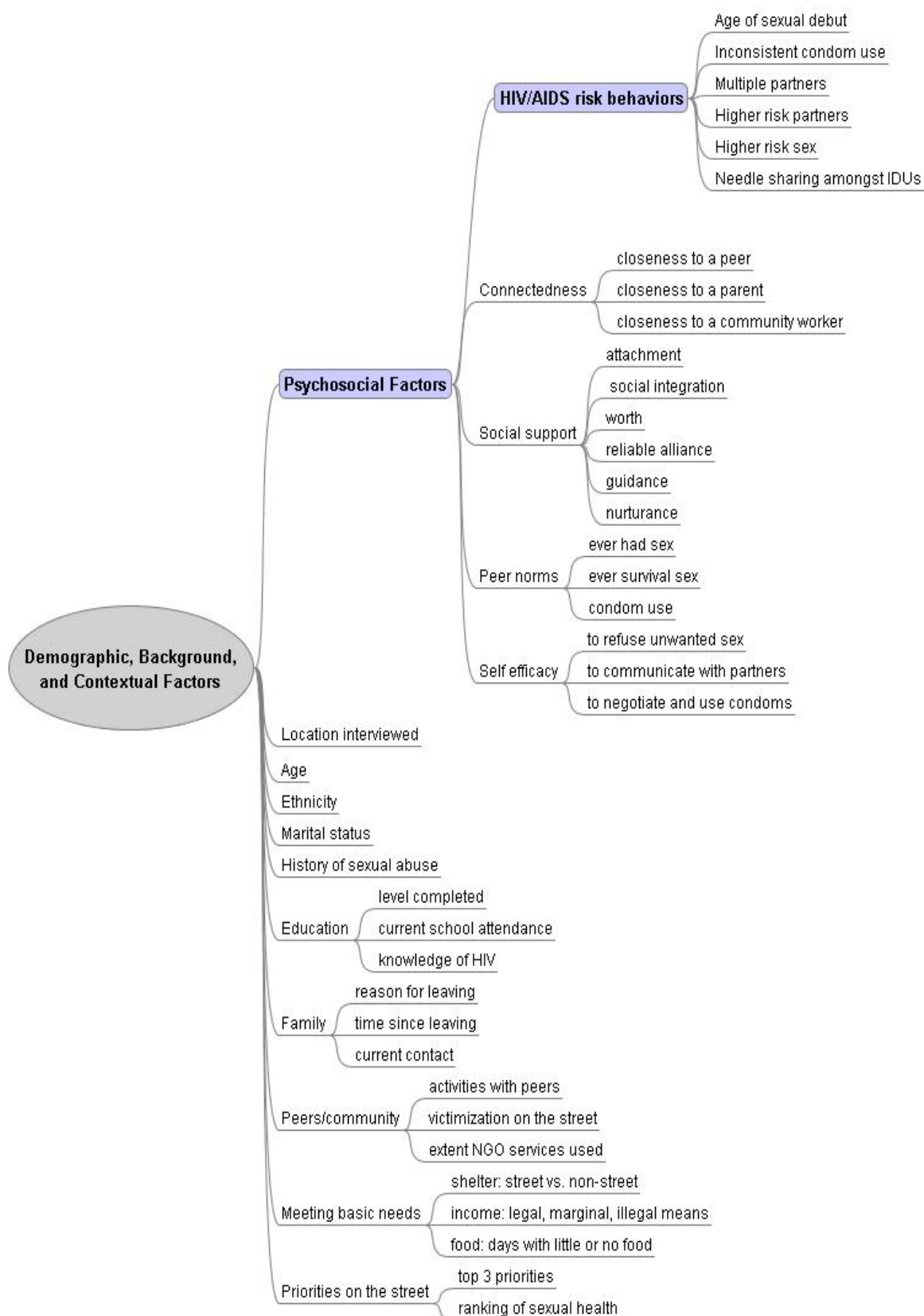
### **3.1 *Study design***

This cross-sectional survey was performed by means of a closed-ended orally-administered questionnaire. The interview incorporated just less than 100 questions and consisted of five parts. Sections were Background information, Sexual and IDU history, Social Support, Self-Efficacy to prevent AIDS, and Perceived Peer Norms. The questionnaire was compiled specifically for this study, and included original questions, previously used questions, and two validated psychosocial instruments (see Section 3.3). In addition to the quantitative component, key informants were interviewed from NGOs, hospitals, rehabilitation centers, detoxification centers, needle exchange programs, and outreach programs. Important meetings were attended at the VCT Police Hospital and at the British Embassy. Finally, a small number of individuals were invited to share their case-stories. The study was carried out in collaboration with SathSath, a local NGO who works with street children in Kathmandu.

### **3.2 *Conceptual framework***

This project did not conform to a particular social-cognitive theory for studying HIV risk behavior. The used framework (illustrated in Figure 1) was influenced by Rew's model of Sexual Health Practices of Homeless youth, (37) and variables were selected based on their importance in the peer-reviewed literature.

**Figure 1 – Conceptual framework of the study**



### **3.3 Measures and instruments**

#### **3.3.1 Demographic, background, and contextual factors**

Some questions were derived from previous research with adolescents, (11;15-17;20;30;68;86;86-89), and a few were developed by the main researcher. HIV knowledge questions were chosen from the FHI and Impact publication, Behavioral Surveillance Surveys (BSS). (89)

#### **3.3.2 Global and recent measures of HIV risk**

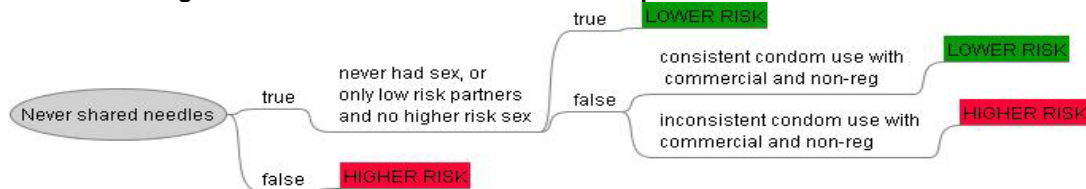
Our questions on HIV risk included both lifetime and recent reports of sexual activity. Again, we used wordings from BSS. (89) First, we asked sexually active participants at what age they first had vaginal or anal sex. Next, we asked how many regular partners (spouses), commercial partners (anyone to whom they gave money to for sex), and non-regular partners (anybody else) they had ever had. This was followed up by asking with what frequency they used condoms with each of these partners. After that, we asked participants if they had had any known HIV positive, IDU, or commercial sex partners, and if so, how many times this had been unprotected in the last three months. We also asked participants if they had had a partner who they knew to be of lower risk. This was defined as someone who they knew for sure had never sold sex or injected drugs, and who did not have HIV. Higher risk sex was also measured in the same way as higher risk partners, and included anal sex, survival sex, forced sex, and sex while intoxicated. Finally we asked all participants if they had ever injected drugs, and if so, with what frequency they shared needles. A recent risk measure was included here as well, with number of needles shared in the last three months.

#### **3.3.3 Composite measure of HIV risk**

The outcome variable in this study was a composite measure which accounted for needle sharing, higher risk partners, higher risk sex, and inconsistent condom use. Respondents were categorized into higher and lower risk categories (mapped in Figure 2). Any respondent who had shared injection needles was classed as higher risk. Also, any youth who reported inconsistent condom use with commercial or non-regular partners, and who had either a higher risk type of sex or a partner other than one known to be of low risk,

was placed in the same category. Lower risk youth included those who had never had sex or shared a needle. This category also included those who either had only had sexual partners known to be at low risk, or who reported consistent condom use with commercial and non-regular partners.

**Figure 2 – Classification flowchart for composite measure of HIV risk**



### 3.3.4 Connectedness

This study incorporated three simple questions in 4-point Likert format, which ranged from ‘not at all’ to ‘definitely’. The questions were influenced by those used in one American and one Peruvian study. (32;86) We asked to what extent a participant felt close to each of a friend, family member, and community worker (i.e. that he was important to them and that they cared about him).

### 3.3.5 Perceived peer norms

The three questions included in this section focused on one’s belief about his peers’ actions. Variables were measured by 5-point Likert scales which ranged from ‘none’ to ‘all’. We asked participants how many of his peers he believed had had sex, had had survival sex, and of those who had had sex, who used condoms.

### 3.3.6 Social support

The current study employed the 24 item Social Provisions Scale (4-point Likert format), where responses ranged from ‘strongly disagree’ to ‘strongly agree’, which has possible scores of 24 to 96, and where higher scores indicate higher levels of perceived social support. Subcategories are guidance (advice or information), reliable alliance (the ability to count on someone for tangible assistance), reassurance of worth (recognition of one’s value, skills and competence by others), nurturance (the sense that others rely on one for their own well being), social integration (a sense of belonging to a group that shares similar interests and activities), and attachment (emotional closeness and the associated

sense of security).

### **3.3.7 Self-efficacy**

This study used a variation of Kasen's self-efficacy to prevent AIDS scale for engaging in protective sexual health behaviors, which included three components of self-efficacy that have been established in the literature: perceived ability to refuse sexual intercourse, to question sexual partners regarding their sexual history and past drug use, and to obtain and use condoms in different situations. (90) The version used in this study was one previously validated for Mexican adolescents (SEA-27), (91) where it had been modified for clarity as well as had incorporated additional questions about marriage, faithfulness, and talking about sex with parents. The SEA-27 uses 5-point Likert format, and response categories range from 'not sure' to 'totally sure'. It has possible scores of 27 to 135, with higher scores indicating more self-efficacy.

## **3.4 Sampling**

### **3.4.1 Target population**

All 15-24 year olds who live on the street, work on the street, or transit in the street in Kathmandu, Nepal.

### **3.4.2 Inclusion and exclusion criteria**

Participants were between 15-24 years of age and had not previously participated in the study. Youth who lived on, worked on, or who spent significant amounts of time on the street were all eligible. Practical operationalization of the definition was guided by the screening criteria used in a recent Nepalese KAPB study. (11)

### **3.4.3 Sample size**

Sample size was determined based on the expected correlation between the outcome variable and another important variable in the study. Social support was chosen as it represented its overall theme, and as it had been previously used with populations of street youth, where its Pearson correlation to safe-sex behaviors was ( $r = 0.20$ ). (21) For sample size purposes, the null hypothesis was that there was no correlation between HIV risk and social support, and the alternative hypothesis was that there was a correlation. Therefore, to

detect a correlation of 0.20 between these two covariates with 80% power on 5% significance level we needed 191 participants. To take into account confounding variables, we wanted to include at least 100 further observations, therefore allowing for the inclusion of explanatory factors in the regression model.

### **3.5 *Translation procedures***

Translations from English to Nepali were made for the consent form, inclusion criteria, interview coding sheet, and educational information on HIV/AIDS. For the main questionnaire, the first translation was made by an administrator of a school who is fluent in both languages. Next, this translation was reviewed at SathSath for cultural appropriateness, language used with street youth, relevance, length, and included questions and answers. The third phase of translation took place after the pilot study, where research assistants pooled suggestions. The final corrections were performed by an experienced Nepali-English translator, who is also a psychosocial counselor. Upon receipt of the final questionnaire, the co-supervisor and the collaborating NGO workers confirmed its quality.

### **3.6 *Social mapping analysis***

A mapping analysis was performed using results from the recent KAPB study, where investigators had done a ‘social mapping’ of Kathmandu street youth, and had estimated their concentrations by sub-areas of the city. (11) From their list of areas, we categorized each into one of five sectors of Kathmandu (labeled Kalimati, Basundhara, Baneshwor, Patan and Putalisadak), or designated it as ineligible, for example if it was quite far outside the ring road. Next, we calculated the total expected number of youth in each of these five quintiles. High concentration sub-areas (areas from which we could obtain five or more interviews) were also identified.

### **3.7 *Recruitment and training of field workers***

Ten youth were recruited by SathSath as potential interviewers for this project. Of these, five were street youth that were integrated with the NGO, and five were students. During training, these youth were given an introduction to SathSath and to the project, discussed about ‘street nature’ and how to work with street youth, and were made aware of their target group, of interview procedures, of ethical issues including an emphasis on



confidentiality, and of their roles as field workers. Of these youth, seven completed the interview period. Where possible, researchers worked in teams of two, with each team including one street youth and one student. Each team was designated an area of Kathmandu from which to recruit participants, and was asked to perform up to four confidential interviews per day from within that area. Field workers were paid for their services at a fair wage, as agreed upon with the collaborating NGO, and were provided with an allowance for the extra transportation costs associated with night field work.

### **3.8 *Pilot study and pretest***

For this project, we performed two days of pre-test and pilot study for the questionnaire and interview procedures. The first day we recruited youth from SathSath's drop-in centre in New Baneshwor. The second day, half of the field workers went to the SathSath drop-in centre in Patan, and the other half went to the one in Kalimati. In total 20 youth were interviewed. Researchers were each given individual feedback upon handing in completed data sheets, and group feedback was provided. Field workers were invited to share their experiences with the questionnaire and to recommend changes.

The second phase of the pilot study was for the appropriateness of field locations. It was an opportunity for researchers to become familiar with their areas and to meet the street youth that they could potentially return to interview. For four days, including two mornings and two evenings, field workers explored their areas, to meet with street youth present, to determine numbers of potential interviews from each area (including the age group of the youth), to document walking distances between main locations of their field area, and to comment on the attitudes and reactions of the street youth they met.

### **3.9 *Interview procedures***

A closed-ended multiple-choice questionnaire was used to collect data. After eligibility was verified, for example with respect to age and to not having participated before, participants were reminded that confidentiality of their responses would be ensured, and that they were free to leave at any time. Each was informed of the nature, purpose and procedures of the project, content of the questions, how the project could benefit them, how much time it would take, and what compensation they would receive. Sources of funding, institutional affiliations, anticipated benefits and potential risks of the study were also

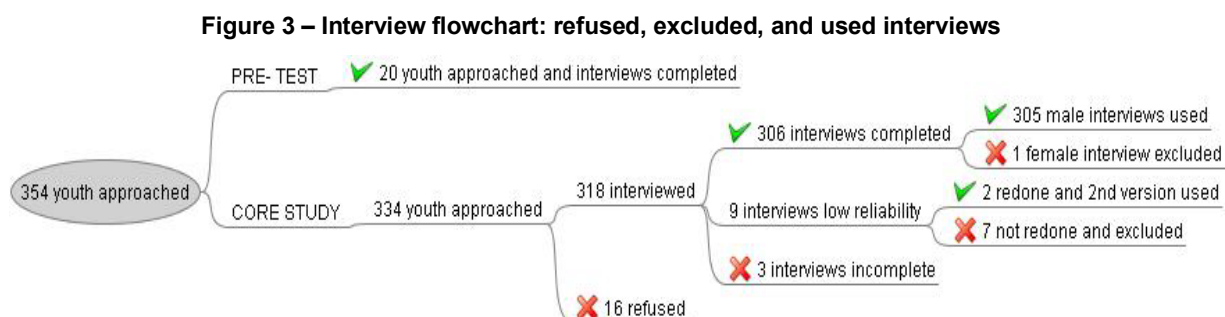
disclosed, and participants were provided with a contact for the main researcher. (92;93) Written informed consent was obtained, interviewers signed to confirm the participant's fully voluntary consent, and participants were given a copy of the consent form.

Interviewers were familiar with the questionnaire, read questions in a neutral way, recorded answers without showing judgment, and provided clarifications upon request. The interviews lasted up to 45 min, and took place both in private improvised street locations, and in drop-in centers of certain NGOs. In both cases, all eligible youth present at a given site were invited to participate.

Youth were encouraged to answer each question honestly. Questionnaires were completed pen and paper style, and participants received a t-shirt as compensation for their time. Field workers also had a small allowance that could be used for tea or a snack for interviewees. Upon completion of the questionnaire, researchers ensured that every question was answered. Youth were given the opportunity to ask questions, were provided with a brochure containing correct answers to the HIV knowledge questions, and were provided with contact information for drop in centers, condom sources, HIV testing and counseling, psychological counseling, and drug related services.

### 3.10 Sample

For the core study, 334 eligible youth were approached for interview. A total of 318 chose to participate in the study. Of these, one interview with a street girl, and ten more with low scale reliability or incompleteness were excluded from final analyses (see Section 5.3.4). A summary of included and excluded interviews is shown in Figure 3.



Of the 307 questionnaires involved in the final analysis, 19% were recruited in the 'Kalimati' or West area, 10% from the 'Basundhara' or North area, 26% from the 'Baneshwor' or East area, 25% from the 'Patan' or South area, and 21% from the

‘Putalisadak’ or Central area. Fifty-two sub-areas of Kathmandu were represented in this study, with the most interviews being taken from Kalimati (20), Balaju (15), Patan Durbar Square (14), Swoyambunath (14), Putalisadak (13), Lagankhel (13), Dhalko (11), Dilibazar (11), Sundhara (10), and Tilganga (10).

Eighty-eight percent of youth were recruited from street locations, while the remainder were recruited from NGOs. Fifty percent of the interviews were done at night, while 29% and 21% were done in the daytime and morning, respectively.

### **3.11 Data input**

During the interview phase, completed coding sheets were regularly submitted to the main researcher for direct input to the Statistical Package for the Social Sciences (SPSS) version 14.0. Accuracy was ensured by checking the data for completeness and errors while submitting results to the database. Inputted data was also double-checked on a separate occasion by comparing computer data to the original coding sheet, and any apparent mistakes were confirmed and corrected.

### **3.12 Data processing and analysis**

All analyses were performed using SPSS using a significance level of  $p < .05$ .

**STEP 1:** Descriptive analyses were carried out using frequencies and percentages (N (%)) for all categorical demographic, background, and contextual variables. Lifetime and recent HIV risk behaviors, as well as perceived connectedness and perceived peer norms, were similarly described. For non-categorical variables, including social support and self-efficacy, measures of central tendency were employed. Where variables were approximately normally distributed, means and standard deviations ( $M \pm SD$ ) were reported, while where they were not, median and range were used.

**STEP 2:** Collinearity amongst all potential predictor variables was assessed and redundant variables were excluded.

**STEP 3:** For multivariate analysis, due to sample size considerations and to non-normality amongst some interval and ordinal measures, all but five explanatory variables were dichotomized. While being mindful of avoiding small cell sizes, classifications or cutoff points were chosen for each variable based either on the purpose of the question, or to be consistent with the reviewed literature, in order to facilitate comparison. ‘Time spent on the

street' and 'Reason for leaving home' maintained their categorical status. 'Perception that peers use condoms' retained its ordinal nature and was treated as a continuous variable, while 'Social support' and 'Self-efficacy to use condoms' retained their continuous statuses.

**STEP 4:** Variables were entered into univariate logistic regression models using the composite measure of HIV risk as the outcome.

**STEP 5:** A multivariate logistic regression model was created where all variables significant to  $p < .30$  in the previous step were simultaneously entered. The final model included variables remaining significant to  $p < .30$  in this multivariate model.

**STEP 6:** To explain some findings from regression analysis, some additional analyses were performed to explore possible interpretations. First, chi-squared tests were used to explore group differences between participants having and not having some characteristics associated with HIV risk. Second, intercorrelations between meeting basic needs, higher risk priorities, and actual HIV risk behaviors were obtained to further investigate the role of risk-clustering. Finally, correlations were again used to determine the best self-efficacy predictors of HIV risk, as well as to find its association to sexual experience and to actual condom use.

### **3.13 *Ethical considerations***

This research conformed in whole to the standards and guidelines set in the Declaration of Helsinki. (92) Ethical clearance was obtained in Norway, as well as in Nepal. Our research adhered to Norwegian ethical standards, and was informed by and compliant to ethical principles employed in past Nepalese studies that required similar ethical reflection. (11)

First, issues of informed consent with respect to minors are relevant. We did not request parental consent, for practical reasons, and for risk of jeopardizing the welfare of youth who came from abusive environments. (17) In the current study, after ensuring that participants understood all relevant information, written informed consent was obtained from participants who were capable and willing, whereas research assistants witnessed and affirmed consent for one who was unable to sign for himself. (16) If field workers had reason to suspect the participant's consent was not fully voluntary and informed, for example due to intoxication or cognitive impairment, the interview was not carried out. (94)

Through this precaution, and by setting the lower age bracket at 15 years, we limited the possibility of including youth who did not fully understand the risks and benefits of the study, and who were not able to make an independent informed decision.

Next, sensitive topics, including those related to HIV, injection drug use, and history of sexual abuse were included based on review of the scientific literature for their importance in influencing results, and for their relevance to the overall purpose of the study. The predictable risks and burdens of this study, such as embarrassment or invasion of privacy, weighed lower than the foreseeable benefit of reducing a vulnerable and marginalized group's exposure to HIV. (93) Although for the most part, the questionnaire posed only minimal risk to participants, there was a chance of invoking anxiety in or of re-surfacing difficult memories. One way of minimizing this risk was to ensure that the appropriate age group was used for certain questions. Also, questions were tailored to the individual, for example if a participant responded that he had never had sex, we did not ask him further questions about risky sexual activities he had engaged in. Finally, we were able to refer participants to appropriate psychological back-up, as well as referral for substance abuse issues and more general or non-immediate concerns.

Finally, as stated in the DoH, from the point of recruiting subjects through to the reporting of results, every precaution was taken to ensure confidentiality. The research assistants present during data collection respected the privacy and ensured the comfort of participants. Participants were identified by code instead of by name, and post-data collection, questionnaires were safely stored by the main researcher. The data file itself is anonymous and not traceable back to individuals.

## Chapter 4 - Results

### 4.1 Descriptive results

#### 4.1.1 Demographic, background and contextual factors

A demographic profile of study respondents is shown in Table 1. Of the 307 male participants, seventeen (6%) were married. Seventy-six percent were between 15 and 19 years of age, while the remaining quarter was between 20 and 24 years of age. Sixteen and seventeen year olds comprised the greatest number of respondents, with 19% and 17%, respectively. Ethnically, the most participants interviewed came from hill ethnic groups such as Gurung and Magar (38%), followed by Brahmins and Chhetris (26%). Street youth from marginalized caste groups represented 18% of those interviewed. Seventy-eight percent of participants had completed at least one year of education and of those, 23% had completed at seven years or more. However, only 13 youth (4%) were currently attending school.

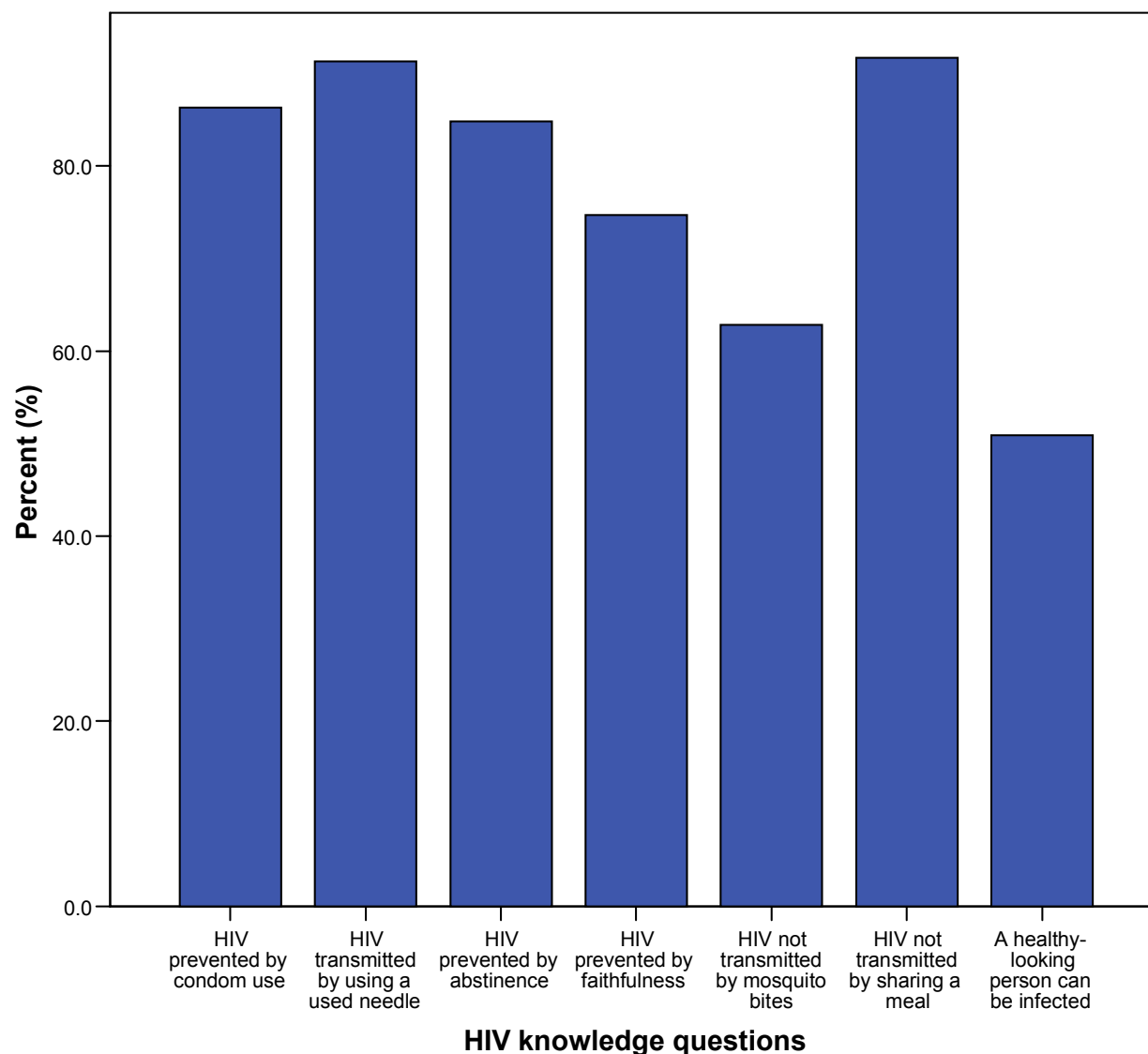
As for awareness and knowledge of HIV, nine in ten participants had heard of HIV. Of those who had heard of HIV, with respect to the two most important means of HIV transmission and prevention, 86% of respondents correctly identified that a using a condom correctly and consistently could protect them from HIV, and 91% knew that HIV could be transmitted by ‘getting injections with a needle that had already been used by somebody else’. Seventy-nine percent answered correctly to both of these questions. As for common misconceptions, an enormous 42% believed that a healthy looking person could not be infected with HIV, and a further 8% responded that they did not know. However, 63% correctly rejected the misconception that HIV could be spread by mosquito bites. The great majority of respondents (92%) also knew that HIV could not be transmitted by sharing a meal. Finally,

**Table 1 – Demographic profile of the sample (N = 307)**

		N (%)
Marital status	Yes	17 (5.5)
	No	290 (94.5)
Age	15 - 19	234 (76.2)
	20 - 24	73 (23.8)
Ethnicity	Brahman, Chhetri	80 (26.1)
	Giri, Puri, Newar	23 (7.5)
	Pariyar, Bishwokarma...	56 (18.2)
	Hill ethnic	115 (37.5)
	Tarai ethnic	29 (9.4)
	Mixed or other	4 (1.3)
Years of completed education	0	68 (22.1)
	1-3	86 (28.0)
	4-6	98 (31.9)
	7 or more	55 (17.9)

the majority of respondents knew of abstinence (85%) and faithfulness to an uninfected sex partner (75%) as additional means of protection from the HIV virus. A summary of correct answers to the above follow-up questions is shown in Figure 4. Of the 277 respondents who had heard of HIV, 15% had comprehensive knowledge of it, meaning that they answered correctly to all seven follow-up questions.

**Figure 4 – Proportion of respondents who answered correctly to HIV knowledge questions amongst those who had heard of HIV (N = 277)**



The majority of participants had left home, or had started spending time on the street, many years ago, with 93% of those who knew how long ago they left having done so at least one year before, and with 55% of this same group having done so more than five

years ago. An additional eleven participants did not know how long ago they left. The most commonly stated reasons for leaving were economic-related (38%), and due to family conflict (34%). A further quarter (26%) expressed their reason for leaving as being related to peer groups, to drug or alcohol use, or to the will for freedom or independence. The most frequent description of current family contact was 'occasional' (59%), while 30% stated that they did not visit their families at all. Nine percent of respondents reported some kind of sexual abuse.

As the first measure of meeting basic needs, when asked where participants stayed at night, the most chosen response was street locations (49%). When combined with those staying at temples, schools, kawaads, and other public places, this figure rose to 72%. Only 4% lived with their families, while 7% stayed in night shelters, and 18% stayed in a rented room. As for meeting financial needs, where respondents could choose up to three answers, a great majority (85%) mentioned ragpicking, with the next most common answers being employed either regularly (most days or every day - 46%) or non-regularly (some days - 40%). Two in five respondents mentioned a marginal or illegal (begging, stealing, or dealing drugs) means of sustenance. Lastly, with respect to food needs, 70% reported that they had had days with little or nothing to eat since coming to the street.

In response to activities with their peers, 77% of respondents mentioned entertainment, such as watching movies or playing cards as one of their (up to three) choices. This was closely followed by ragpicking at 71%. Almost half of respondents (46%) reported one or more of using or selling drugs, stealing, fighting, or going to cabin restaurants, as an activity with their peers. Similarly, 53% of participants said that they had been threatened, beaten, robbed, or sexually assaulted by someone on the street. With regard to the use of NGO services, 23% said they used these often or every day, while 61% used them sometimes, and 16% never used them.

When asked about their three highest priorities on the street, an overwhelming majority (90%) mentioned money as being important to them. The next most common responses were safety (51%) and food (44%). Staying healthy and clean was mentioned by 31% of respondents. We also asked them to rank how important it was for them to maintain their own sexual health. Seventy-three percent of those who responded said that this was at



least kind of important, with 23% stating that it was very important. Fifteen percent said that this was not important to them at all.

#### 4.1.2 HIV risk behaviors

In our sample, 50% of respondents reported ever having sex. Unless otherwise stated, all subsequent analyses are based on these sexually active respondents. For these youth, the median age of first sex was 15 years, with 19% having had sex before or at the age of 12, and with 63% having had sex before or at the age of 15. The age of first sex ranged from one to 21 years of age. Of these youth, participants had between one and 40 sexual partners, with the median number being four. Almost half (45%) had five or more partners, and one in five (19%) had 10 or more lifetime sexual partners. With respect to partner type, 10% had ever had a regular partner, 55% had ever had a commercial partner, and 88% had ever had a non-regular partner. The median numbers of regular, commercial, and non-regular partners were zero, one, and two, respectively. Reported frequency of condom use varied by partner type (see Table 2). Not one participant who had a regular partner reported using a condom with that person more than sometimes, and 13 of these 16 respondents stated that they never used a condom with this partner type. Condom use with non-regular partners was somewhat higher, with 13% of those who had had this type of partner reporting consistent condom use.

Thirty percent said that they never used a condom with this type of partner. Finally, condom use with a commercial sex partner was the most reported, where almost one third (30%) of those who had this type of partner consistently used condoms, but where 15% reported never using condoms with this partner type.

**Table 2 – Frequency of condom use by partner type amongst sexually active respondents (N = 155)**

	Regular N (%)	Commercial N (%)	Non-regular N (%)
every time	0 (0)	24 (15.5)	18 (11.6)
almost every time	0 (0)	17 (11.0)	19 (12.3)
sometimes	3 (1.9)	32 (20.6)	57 (36.8)
never	13 (8.4)	13 (8.4)	41 (26.5)
had none of these	139 (89.7)	69 (44.5)	18 (11.6)
no response			2 (1.3)

Participants were then asked about higher risk sexual behaviors including higher risk partners and higher risk sex (see Table 3). Specific higher risk partners we asked about were known HIV positive persons, IDUs, and CSWs. Of the 155 respondents who had had sex, two in three (64%) had had sex with at least one of these partners, with 43% of these

reporting recent unprotected sex with such a partner. In contrast, only twenty-six youth (17%) reported having exclusively partners known to be of lower risk. Twelve sexually active respondents (8%) said that they had sex with an HIV infected person, with five of these saying that they had done so without a condom in the last three months. Thirty-four (22%) said that they had ever had sex with an IDU, with thirteen having done so recently and unprotected. The most common high risk partner, though, was with CSWs, where 92 respondents (59%) had ever had this type of partner. Thirty-nine of these youth, therefore almost half, had done so without a condom in the last three months, and within that subgroup, this had occurred between a reported one and 50 times in that time period.

As for higher risk type of sex, 56% of the sexually active respondents had had at least one type of higher risk sex in their lifetimes, with 46% of these youth having done so recently and unprotected.

Seven percent of youth reported having anal sex, with 7 of these 11 youth having done so recently and unprotected. Survival sex and forced sex were also rarely reported, at 3% and 7%, respectively. By far, the most common instance of potentially higher risk sex was sex while intoxicated, where 50% of respondents reported having done this in their lifetimes. Thirty-six of these 78 respondents, therefore almost half, had done so recently, with the range being between one and 50 times.

**Table 3 – Lifetime HIV/AIDS sexual risk behaviors amongst sexually active respondents (N = 155)**

	N (%)
Sex with an HIV+	12 (7.7)
Sex with an IDU	34 (21.9)
Sex with a CSW	92 (59.4)
Anal sex	11 (7.1)
Survival sex	5 (3.2)
Forced sex	10 (6.5)
Sex while intoxicated	78 (50.3)

Overall, of the sexually active participants in our study, nine in ten had in their lifetimes at least one of either sex with a partner who was not known to be low risk, or a higher risk type of sex. Of these, 41% done so unprotected during the last three months.

As for IDU, amongst youth in our sample, one quarter (24%) of all respondents reported having ever injected drugs, and of these, two in three (65%) shared needles at least occasionally. Thirty-one of the 47 (66%) IDUs who did not report always using a clean needle, had used one that had been first used by somebody else in the last three months. The frequency of which this occurred was up to a reported 100 times.

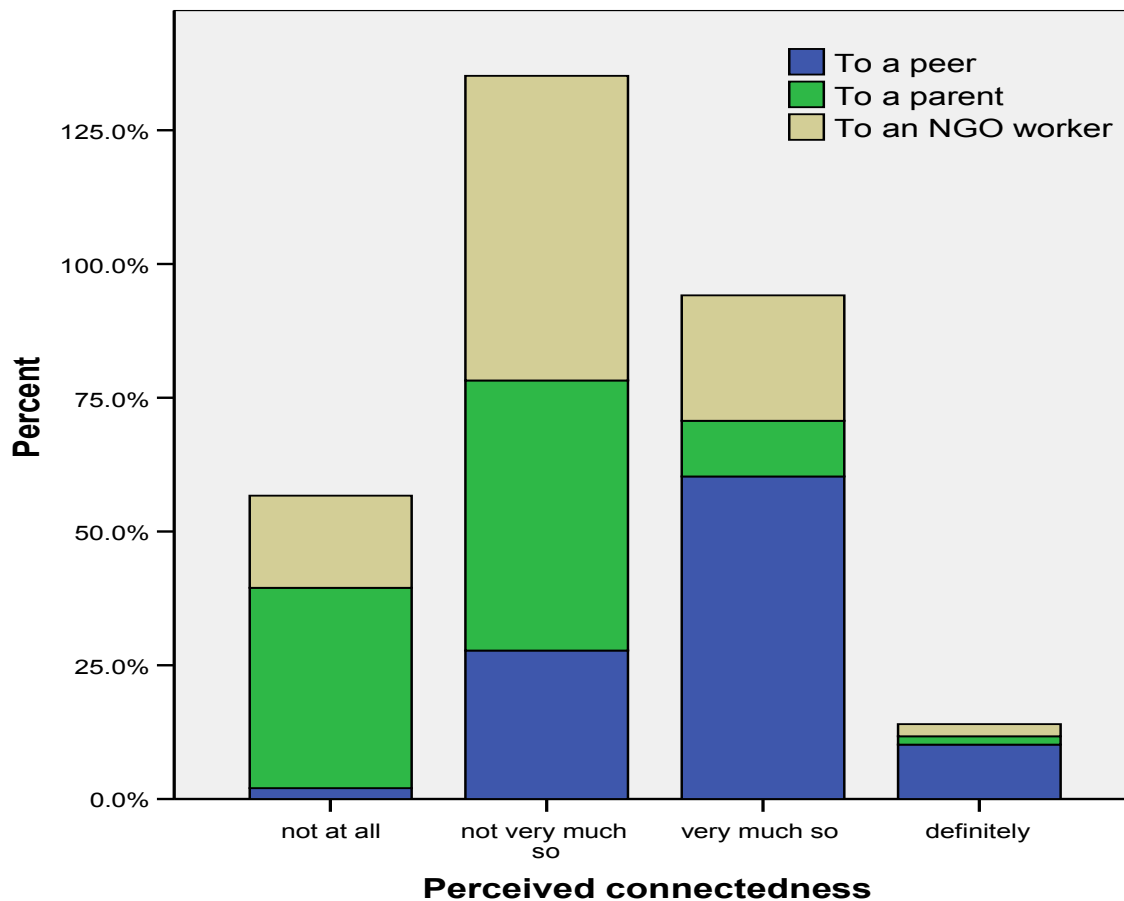
Based on these risk behaviors, our composite measure of HIV risk classified 127 youth of the total sample as higher risk (41%), and the remaining 180 youth as lower risk.

### 4.1.3 Psychosocial factors

#### 4.1.3.1 Connectedness

Perceived connectedness to a peer, parent and NGO worker varied greatly by these categories (see Figure 5 where each category totals 100%). The most connectedness in this study was reported with respect to peers, where 70% felt very much or definitely connected to their peers. Connectedness to a parent was much lower, with only 12% describing this same connection. Relationships with NGO staff scored between the two, with 26% of street youth interviewed feeling close to a staff worker of an NGO.

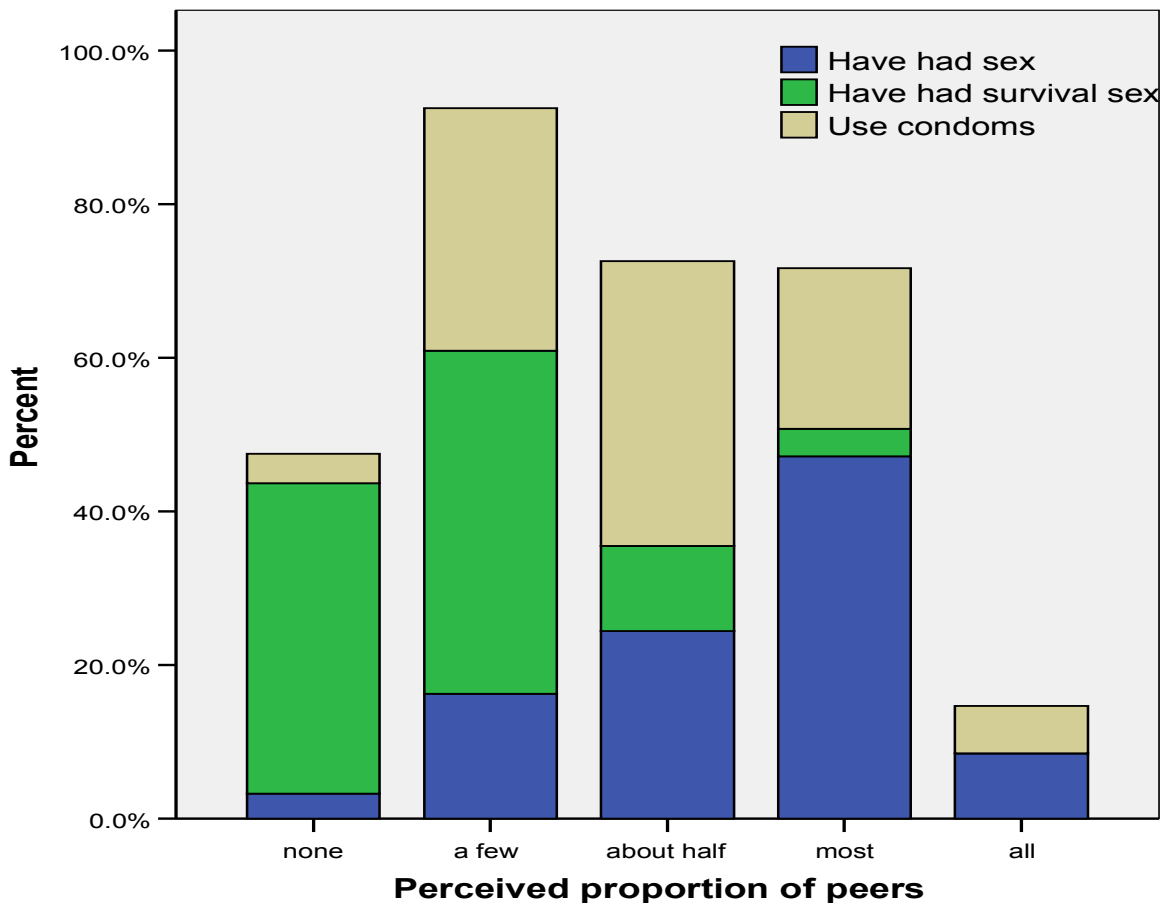
**Figure 5 – Perceived connectedness to a peer, a parent, and an NGO worker  
(N = 307 for each category)**



#### 4.1.3.2 Perceived peer norms

A summary of perceived peer behaviors is shown in Figure 6, where results for each perceived peer behavior total 100%. When asked about how many of their peers they believed had had sex, the majority (56%) believed that either most or all of their peers had done so. Survival sex did not appear to be common among the peer groups, as 85% of youth believed that either none or only a few of their peers had engaged in this. When asked about condom use, almost three in four (73%) believed that only about half of their friends or less used condoms.

**Figure 6 – Perceived proportion of peers who have had sex, had survival sex, and use condoms (N = 306 for each category)**



#### 4.1.3.3 Social support

In this section the SPS scale mean and standard deviation was  $64.29 \pm 9.01$ , with scores ranging from 41 to 83 out of a possible 96 (see Table 4). The internal consistency for the overall scale was .860. Participants reported the highest social support in the Attachment

(11.28  $\pm$  1.74) and Guidance (11.05  $\pm$  2.09) subcategories, while the lowest social support was expressed in the Worth (10.07  $\pm$  2.17) subcategory. The highest reported social support measures were for feeling part of a group who shared one's attitudes and beliefs (3.18), and for having someone to talk to about important decisions in one's life (3.11). The lowest scores were reported for having someone who liked to do the things one did (2.26) and for feeling that other people viewed one as competent (2.29), feeling that others admired one's talents and abilities (2.42), and feeling that others respected one's skills and abilities (2.43).

**Table 4 – Scale Statistics for the SPS (N = 307)**

	Total SPS	Nurturance	Guidance	Reliable Alliance	Worth	Social Integration	Attachment
Number of items	24	4	4	4	4	4	4
Mean	64.29	10.54	11.05	10.72	10.07	10.63	11.28
Std. Deviation	9.007	2.047	2.086	2.064	2.167	1.840	1.735
Cronbach's Alpha	.860						

#### 4.1.3.4 Self efficacy

On this scale the mean score was 79.53  $\pm$  12.93, with scores ranging from 38 to 121 out of a possible 135 (see Table 5). Reliability of the overall scale was .824, while reliability of the self-efficacy to use condoms subscale, which was used in later analyses, was .715. By item mean, participants felt most able to communicate with their partners (3.53), while were relatively less able to refuse sex (2.90), and the least able to obtain and use condoms (2.79) in different situations.

For communicating with partners, participants felt most confident that they could ask their girlfriend if she had used and injected drug (3.93), as well as discuss AIDS prevention with her (3.66). For refusing unwanted sex, the easiest situation was when they did not know their potential partner's drug history (3.07), and the most difficult ones were if someone put pressure on them to have sex (2.66), and when they were with someone with whom their degree of sexual arousal was very high (2.65). For condom use, participants were quite sure of being able to go to the store to buy condoms (4.22), to always have enough money to buy condoms (3.79), and to be able to use a condom correctly (3.60). The lowest scoring items, both on this section and overall, were one's ability to talk to his mother (1.19) or father (1.80) about sexual topics. A final low scoring item in this section was the confidence in using a condom after using a drug such as marijuana or glue (2.38).

**Table 5 – Scale Statistics for the SEA-27 (N = 307)**

	Total SEA-27	Refusing sex	Discussing HIV	Obtaining and using condoms
Number of items	27	11	4	12
Mean	79.53	31.90	14.13	33.51
Std. Deviation	12.929	8.468	3.405	5.822
Cronbach's Alpha	.824			.715

## 4.2 Logistic regression analyses

### 4.2.1 Collinearity analysis

A summary of the collinearity analysis, which shows intercorrelations of  $r > .500$ , is presented below (Table 6). From this analysis, three themes were identified where variables may have been redundant. Current family contact and connectedness to a parent were highly intercorrelated, as was connection to a community worker with extent of NGO services used. In both cases, the connectedness variable was retained, due to congruence with the objectives of the study, while the two were excluded from regression analysis. Also, activities with peers, meeting financial needs, and priorities on the street, were positively intercorrelated as they all represented the theme of marginal, illegal, or higher risk activities, including drug use. Activities with peers was retained to represent this topic, while the other two variables were excluded.

**Table 6 – Intercorrelation matrix of selected variables (Spearman's rho)**

	Current family contact	Extent of service use	Priorities: Mentioned drugs or police	Higher risk activities with peers
Connectedness to a parent	.809**			
Connectedness to NGO staff	-.006	.740**		
Higher risk activities with peers	.033	.017	.590**	—
Meeting financial needs: marginal or illegal means	-.021	.008	.483**	.525**

\*\* Correlation is significant at the 0.01 level (2-tailed).

### 4.2.2 Univariate logistic regressions

Based on results from univariate logistic regressions, four variables which showed  $p > .30$  (marital status, ranking of sexual health, connection to a peer, and perceived peers have had survival sex) were excluded from consideration for the final multivariate model. The individual associations of remaining variables with HIV risk are shown in Table 7.

**Table 7 – Univariate logistic regression models predicting risk for HIV**

	OR (95% C.I.)	<i>p</i> - value
Area interviewed (categorical)	[overall effect]	.100
Interviewed from a street location	3.292 (1.394 – 7.776)	.007
Age is 20-24	2.375 (1.391 – 4.056)	.002
Marginalized ethnicity	1.677 (.937 – 3.002)	.082
Currently married	.762 (.274 – 2.116)	.602
History of sexual abuse	2.450 (1.073 – 5.594)	.033
More than 3 years completed education	.675 (.427 – 1.066)	.092
Currently attending school	.411 (.111 – 1.526)	.184
Correct HIV knowledge of condom and needle sharing	1.690 (1.007 – 2.835)	.047
Reason for leaving (categorical)	[overall effect]	.244
Time since leaving home (categorical)	[overall effect]	.001
Higher risk activities with peers	3.132 (1.953 – 5.024)	< .001
Victimization on the street	1.542 (.974 – 2.440)	.064
Shelter needs: Sleeps on the street or another public place	1.363 (.815 – 2.279)	.238
Food needs: days with little or nothing to eat	3.109 (1.797 – 5.379)	< .001
Priorities on the street: mentioned health	.641 (.387 – 1.062)	.084
Sexual health is very important	1.142 (.668 – 1.953)	.627
Connection to a peer	.977 (.595 – 1.607)	.928
Connection to a parent	.414 (.188 – .911)	.028
Connection to a community worker	.530 (.307– .914)	.022
Perceived at least half of peers have had sex	4.462 (2.164 – 9.199)	< .001
Perceived at least half of peers have had survival sex	1.300 (.688 – 2.455)	.419
Perceived more peers use condoms	.835 (.664 – 1.051)	.124
Social support	.949 (.924 – .975)	.000
Self-efficacy to use condoms	.935 (.898 – .974)	.001

### 4.2.3 Multivariate logistic regression

After entering remaining variables into a multivariate logistic regression model, four additional variables, whose significance levels became  $p > .30$  (being recruited from a street location, level of completed education, victimization on the streets, and mentioning health as a priority), were removed. The final model is presented in Table 8.

Some demographic, background, and contextual factors remained important predictors of HIV risk when included amongst others in the regression model. First, an overall significant effect was found for area of Kathmandu interviewed ( $p < .005$ ), where participants recruited from Patan, Baneshwor, and Kalimati areas had significantly less odds of being classed as higher risk than those from Putalisadak area. Similarly, time since leaving home had an important overall effect in influencing risk for HIV ( $p < .05$ ), despite significant odds ratios not being observed between its categories. Next, participants who

were 20-24 years of age had 2.23 times greater odds of being classified as higher risk for HIV than those aged 15-19 ( $p < .05$ ). In addition, those who had had difficulty meeting food needs had 2.29 times greater odds of being classed as higher risk than those who had not had days like this ( $p < .05$ ). Engaging in higher risk activities with peers was an important predictor of HIV risk, as those who did this had 3.63 times greater odds of being classed as higher risk than those who reported only safer activities ( $p < .001$ ). The second relatively strong predictor of this category of variables was having a history of sexual abuse, as participants who reported this were 6.74 times more likely to be classed as higher risk for HIV than those who did not have this history ( $p < .005$ ).

A number of psychosocial variables proved to be important predictors of HIV risk in Nepalese street adolescents, even when all other variables were held constant. First, the odds of being classed as higher risk for HIV were reduced by 63% for respondents who felt connected to a community worker when compared to those who did not feel that connection ( $p < .05$ ). Next, youth who perceived that at least half of their peers had had sex had 4.90 times greater odds of being classed as higher risk for HIV than those who believed that less than half of their peers had done so ( $p < .005$ ). With respect to continuous variables, with a one unit increase in social support, our participant's odds of being classed as higher risk were reduced by 5% ( $p < .05$ ). Finally, with a unit increase in self-efficacy to use condoms, our respondent's odds of being classed as higher risk for HIV were reduced by 11% ( $p < .005$ ).



**Table 8 – Multivariate logistic regression model predicting risk for HIV (N = 306)**

		OR	(95% CI)	p - value
Area interviewed	[Overall effect]			.001
	Putalisadak (ref)	1.000		
	Kalimati	.231**	(.080 – .671)	.007
	Basundhara	3.402	(.946 – 12.242)	.061
	Baneshwor	.275*	(.099 – .765)	.013
	Patan	.343*	(.124 – .948)	.039
Age	15 - 19	1.000		
	20 - 24	2.226*	(1.080 – 4.586)	.030
Ethnicity	Non-marginalized group	1.000		
	Marginalized group	1.526	(.706 – 3.299)	.283
History of sexual abuse	No	1.000		
	Yes	6.740**	(2.126 – 21.368)	.001
Currently attending school	No	1.000		
	Yes	.222	(.039 – 1.268)	.090
HIV knowledge (two most important means of transmission)	Incorrect/did not know at least one question	1.000		
	Correct on both questions	1.646	(.774 – 3.500)	.196
Reason for leaving	[Overall effect]			.215
	Freedom, friends, drugs (ref)	1.000		
	Family reasons	.777	(.337 – 1.791)	.554
	Economic, internal conflict, HIV or other	.501	(.222 – 1.132)	.097
Time since leaving home	[Overall effect]			.014
	Less than 2 years (ref)	1.000		
	More than 2 years	2.146	(.928 – 4.964)	.074
	Does not know	.104	(.008 – 1.397)	.088
Activities with peers	Does not include higher risk activities	1.000		
	Includes higher risk activities	3.629**	(1.796 – 7.334)	<.001
Meeting shelter needs (usual place to sleep)	Home with family, rented room, night shelter	1.000		
	Street, temple, other public place	.498	(.218 – 1.139)	.099
Meeting food needs	Has not had days with little or nothing to eat	1.000		
	Has had days with little or nothing to eat	2.289*	(1.089 – 4.812)	.029
Connection to a parent	No	1.000		
	Yes	.429	(.150 – 1.227)	.115
Connection to a community worker	No	1.000		
	Yes	.374*	(.167 – .837)	.017
Perceived peers have had sex	Less than half	1.000		
	At least half	4.903**	(1.956 – 12.287)	.001
Perceived peers use condoms (continuous)		.785	(.549 – 1.122)	.184
Social support (continuous)		.952*	(.916 – .989)	.012
Self-efficacy to use condoms (continuous)		.895**	(.835 – .959)	.002

### 4.3 Post-regression analyses

#### 4.3.1 Chi-squared analysis of group differences

Because our measure of HIV risk was a composite one, we used exploratory chi-squared analysis of predictors to determine group differences, and ultimately to help us better understand why some participants were more at risk of contracting HIV than others. Some of the many significant results from this analysis are shown in Table 9.

**Table 9 – Chi-squared analysis of predictors of HIV risk**

Predictor of HIV risk	Selected associated variables	df	N	$\chi^2$	p
Kalimati area	Left home more than two years ago	1	296	6.618	.010
	Sleeps on the street or in another public place	1	307	15.812	.000
	Has experienced victimization	1	307	25.805	.000
Basundhara area	Never uses NGO services	1	307	10.627	.003 <sup>a</sup>
Baneshwor area	Perceives that less than half of peers use condoms	1	306	10.465	.001
	Perceives less self-efficacy to use condoms	1	307	14.227	.000
	Inconsistent condom use with commercial partners	1	86	7.398	.007
	Recent unprotected sex with CSW	1	92	10.896	.001
	Recent unprotected sex while intoxicated	1	78	8.357	.004
Patan area	Younger age (15-19)	1	307	5.110	.024
	Left home two years ago or less	1	296	7.862	.005
	Engages in higher risk activities with peers	1	307	19.316	.000
	Has higher risk priorities	1	307	13.348	.000
	Has never injected drugs	1	307	11.809	.001
Putalisadak area	Had a known HIV positive partner	1	155	4.507	.049 <sup>a</sup>
	Has had sex with a CSW	1	155	4.029	.045
	Has had sex while intoxicated	1	155	11.991	.001
	Consistent condom use commercial partners	1	86	7.410	.006
Older age (20-24)	Had 5 or more sexual partners	1	154	6.444	.011
	Has ever injected drugs	1	307	16.606	.000
History of sexual abuse	Age of 1 <sup>st</sup> sex is before or at 12 years	1	155	18.178	.000 <sup>a</sup>
	Has had survival sex	1	155	11.785	.011 <sup>a</sup>
	Has had forced sex	1	155	15.346	.002 <sup>a</sup>
	Uses NGO services often or everyday	1	307	5.625	.018
	Perceives connection to an NGO worker	1	307	15.182	.000
Left home more than two years ago	Knows two important means of HIV transmission	1	296	4.744	.029
	Difficulty meeting food needs	1	296	19.301	.000
	Engages in higher risk activities with peers	1	296	5.916	.015
	Has experienced victimization	1	296	13.600	.000
	Has ever had sex	1	296	15.164	.000
	Perceives less connection to a parent	1	296	4.776	.029
Connection to a community worker	Consistent condom use commercial partners	1	86	12.475	.000
	Consistent condom with non-regular partners	1	135	7.099	.013 <sup>a</sup>
	Less recent unprotected sex with CSW	1	92	12.037	.001
	Less recent unprotected sex while intoxicated	1	78	4.197	.040
	Has never injected drugs	1	307	4.045	.044
Perceived at least half of peers have had sex	Engages in higher risk activities with peers	1	306	11.319	.001
	Has higher risk priorities	1	306	6.188	.013
	Has ever had sex	1	306	33.826	.000
	Has had five or more sexual partners	1	153	5.323	.023 <sup>a</sup>
	Has had sex with a CSW	1	154	6.760	.016 <sup>a</sup>
	Has ever injected drugs	1	306	7.593	.006
Social support (median split)	Is married	1	307	4.277	.039
	Sleeps home with family, rented room, shelter	1	307	5.454	.020
	Currently attending school	1	307	12.472	.000
	Feels connected to a peer	1	307	6.804	.009
	Left home more than two years ago	1	296	5.573	.018
Self-efficacy to use condoms (median split)	Perceives that at least half of peers use condoms	1	306	17.494	.000
	Perceives more connection to a peer	1	307	4.261	.039
	Perceives more connection to an NGO worker	1	307	5.286	.021
	Has never injected drugs	1	307	3.928	.048
	Has not shared needles in the last 3 months	1	46	6.133	.013

<sup>a</sup> Fisher's exact test (at least one cell has expected count < 5)

### **4.3.2 Risk-clustering intercorrelations**

As regression analyses suggested the importance of risk clustering, we investigated this through intercorrelations between relevant variables. This matrix is shown in Table 10. First, all measures of meeting basic needs, and of having higher risk activities, priorities, and experiences on the street, were significantly intercorrelated. Therefore, the same respondents were slept on the streets or in another public place were often the same ones to engage in begging, stealing or dealing drugs to meet financial needs, to have had had days with little or nothing to eat, to use drugs, steal, fight, or go to cabin restaurants with peers, to mention getting drugs or avoiding the police as priorities, and to have experienced victimization.

These measures were also significantly correlated to behaviors that would put them at risk for HIV. Inconsistent condom use was associated with difficulty meeting food needs, while IDU was associated with marginal and illegal means of meeting financial needs, difficulty meeting food needs, engaging in higher risk activities with peers, and having higher risk priorities. Also, having had a commercial partner was associated with higher risk activities with peers, and having had sex while intoxicated and having 10 or more sexual partners were both significantly associated with each of having marginal or illegal means of meeting financial needs, higher risk activities with peers and having higher risk priorities.

Finally, HIV risk behaviors were also intercorrelated, suggesting that those who engaged in one risky behavior may be the same ones to engage in others, thus compounding their risk. Here, those who reported inconsistent condom use with commercial partners also reported it with non-regular partners, and were more likely to share needles if they injected drugs. Second, all of IDU, having a commercial partner, having had sex while intoxicated, and having 10 or more lifetime sexual partners were significantly intercorrelated.

**Table 10 – Intercorrelations between difficulty meeting basic needs, higher risk activities, priorities, and experiences on the street, and HIV risk behaviors (Spearman's rho)**

		Basic needs			Activities, priorities and experiences		HIV risk behaviors			
		Shelter	Financial	Food	Activities with peers	Higher risk priorities	Inconsistent condom use: commercial	IDU	Sex with a CSW	Sex while intoxicated
Basic needs	Financial	.281**								
	Food	.189**	.141*							
Activities, priorities, and experiences	Activities with peers	.269**	.525**	.238**						
	Higher risk priorities	.179**	.483**	.169**	.590**					
	Victimization on the street	.223**	.300**	.370**	.257**	.214**				
HIV risk behaviors	Inconsistent condom use: commercial	.148	.066	.253*	.066	.147				
	Inconsistent condom use: non-regular	.124	-.003	.306**	.144	.041	.698**			
	IDU	.106	.209**	.114*	.246**	.243**	.032			
	Shared needles	.158	.035	.057	-.062	.035	.325*			
	Sex with a CSW	.120	.097	-.006	.167*	.123	-	.282**		
	Sex while intoxicated	.033	.162*	.036	.203*	.162*	.089	.323**	.281**	
	Ten or more partners	.152	.241**	.105	.249**	.275**	.161	.359**	.260**	.316**

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

### 4.3.3 Correlates of self-efficacy measures

This analysis surfaced four items from the self-efficacy to use condoms subscale that were protective of HIV risk, demonstrated its positive relationship to consistent condom use, and showed its negative relationship to sexual experience (see Table 11 and Table 12).

**Table 11 – Spearman correlations for self-efficacy to use condoms items protective of HIV risk (N = 307)**

	HIV risk	
	r	p - value
To use a condom each time one has sex	-.125	.028
To use a condom during sex after one has been using a drug	-.178	.002
To not have sex until one gets married	-.396	<.001
To have sex with the same person one's whole life	-.409	<.001

**Table 12 – Spearman correlations between self-efficacy to use condoms, actual condom use, and sexual experience**

	Self-efficacy to use condoms	
	r	p - value
Consistent condom use with commercial partners	.274	.011
Consistent condom use with non-regular partners	.224	.009
Ever had sex	-.140	.014

## **Chapter 5 - Discussion**

### **5.1 *Summary of important findings***

This study captured a very high risk sub-group of street-based youth in Nepal. Almost one third of respondents had no contact with their families and almost all were out of school. Many participants showed characteristics of more severe homelessness including sleeping on the street or in another public place, being integrated into the street economy through drug use and higher risk activities with peers, and having been on the streets for many years. Reported HIV risk behavior was common, most notably with respect to commercial sex partners and sex while intoxicated. Furthermore, consistent condom use was rare, and rates of injection drug use were surprisingly high. Contrarily, levels of connectedness, social support, and self-efficacy were relatively low, and participants perceived that many of their friends had had sex, while fewer used condoms. Of the demographic, background, and contextual variables considered, multivariate regression showed that area interviewed, older age, a history of sexual abuse, longer time since leaving home, difficulty meeting food needs, and engaging in higher risk activities with peers to be independent predictors of HIV risk. With respect to the main objective of this study, modifiable psychosocial variables were also found to be important, and remained independent predictors of HIV risk even when included amongst other variables in the regression model. Connection to a community worker, the perception that few of one's peers had had sex, more social support, and greater self-efficacy to use condoms were all independently protective of our composite measure of HIV risk.

### **5.2 *Discussion of results***

#### **5.2.1 *Descriptive results***

With respect to Nepalese street youth, the most important study for us to draw comparisons with was the KAPB study done two years ago amongst street-based children in Kathmandu and Pokhara. (11) We compared our results to theirs found for Kathmandu street boys. The other study that was relevant to us was the most recent DHS survey done in the general population of Nepal, from which we compared, unless otherwise specified, to their results for 15-24 year old males. (46) We examined trends between studies due to both

differences in variable operationalizations and to not knowing to what degree differences were significant.

#### **5.2.1.1 Demographic, background, and contextual factors**

Marriage rates in both samples of street youth were similarly low, especially when compared to the general Nepalese population, where 10% of 15-19 year old and 56% of 20-24 year old Nepalese men are married.

While it is notable that the majority of boys in our sample had completed at least one year of education, as also found in the KAPB study, current school attendance was minimal. Ethnic distribution was comparable between all three samples, suggesting that for Kathmandu street boys, those from marginalized caste groups are not over-represented in that population. However, as suggested by the KAPB study, this assertion might not extend to females or to street youth in other Nepalese towns.

Some important differences were apparent between the two samples of street youth. In addition to the fact that we recruited an older sample, our respondents had left home a longer time ago (53% of ours vs. 17% of their street-living respondents reported leaving more than five years ago). Based on discussions with street boys, and as congruent with a previous Nepalese study which discussed how in the street environment, these youth are not constrained by responsibilities, (87) some felt that they had a freer, more independent, and overall better life on the streets than they would at home, and therefore chose to stay there for many years. Others were on the streets for a longer time due to drug-related reasons that drew them to the street economy to meet their substance needs. This explanation also helps to explain why some youth with high levels of completed education were still street-based. With regard to reason for leaving, although the proportion of youth leaving because of the country's internal conflict was surprisingly small, it was similar to that figure in the KAPB study, and may have been much higher if we had sampled youth from Terai towns. Finally, boys in our sample were also more likely to be sleeping on the streets or in a public location (72% vs. 48%). The above differences in background characteristics predict that our sample should have higher behavioral risk for HIV than the already high level found in the KAPB sample. Furthermore, as very many of our youth had no contact with their families, resorted to marginal or illegal means of sustenance, had difficulties meeting basic food needs, engaged in higher risk activities with peers, had experienced victimization, and never used

NGO services, our sample represents a very high risk sub-group of street-based youth in Nepal.

#### **5.2.1.2 Awareness and knowledge of HIV**

Previous research, such as a 2004 study of 13-19 year old Kathmandu valley street youth, has demonstrated high awareness of HIV, as well as correct knowledge of the two most important means of HIV transmission (unprotected sex and sharing of injection drug needles) amongst this group. Still, misconceptions were common, as in that study, three in five believed that it was spread by mosquito bites. (95) In both our study and the KAPB study, a similarly large majority of respondents had basic knowledge of HIV. With respect to misconceptions, although fewer participants in our sample answered incorrectly to the questions about mosquito bites (37% vs. 62%) and sharing a meal (8% vs. 32%), the belief that a healthy-looking person could not have HIV (49% vs. 47% answered incorrectly or did not know) persisted. The apparent decline in the first two misconceptions may be due to intervention efforts over the last three years, and therefore to behavior change, or it might be explained by other factors such as differing age groups and backgrounds of the populations.

The idea that targeted education efforts for street youth may have been successful is supported by comparisons to the general population of young Nepalese males, where having heard of HIV and knowing that condom use was protective were similarly high, but where misconceptions about mosquito bites (42%) and sharing a meal (28%) were more prevalent than in our study. Furthermore, chi-squared analysis of our data showed that youth who had been on the streets for two years or more were significantly more likely to know of the two most important means of HIV transmission (and therefore may have learned about this since coming to the streets) than those who had been on the streets for a shorter time. In contrast to the above studies, a 2006 study of 13-17 year old private English medium school students in Kathmandu (96) reported as well as most youth knowing of the most important means of HIV transmission, these youth also knew that HIV was not transmitted by mosquito bites (93%), and that a healthy-looking person could have AIDS (91%). The fact that the highest knowledge of HIV occurred in school-attending youth suggests successes of private school system-based health education. However, despite most street youth not being reached by these programs, they clearly have knowledge of HIV as well, both with respect to the most important means of its transmission, and as they are more recently rejecting certain

misconceptions. Therefore, other strategies, such as recent mass media efforts, such as through public posters, and NGO targeted interventions, seem to have yielded beneficial effects.

#### **5.2.1.3 HIV risk behaviors**

More participants in our study than the 32% in the KAPB study reported ever having had sex. However, our median age of first sex was one year higher than theirs of 14 years, and less of our respondents had had sex before the age of fifteen (41% vs. 57%). In a study of 1050 migrant factory workers aged 14-19 in Kathmandu, who were for the most part separated from their families, 20% of unmarried boys had had sex, and 35% of unmarried sexually active boys had had a non-regular sex partner (someone other than a girlfriend) in the last 12 months. (97) These three samples differ greatly from the general population of Nepalese men where the adult median age of first sex is 20 years. (46) In that sample, only 3% of 15-19 year old men, and 5% of 20-24 year old men had had sex before the age of 15. Youth in our study also had more lifetime sexual partners than the mean of two reported in theirs, and a drastically greater likelihood of having a commercial sex partner, than the only 1% in theirs who had paid for sex in the last 12 months. These findings demonstrate the clear compounding of risk in selected sub-populations of Nepal, and support the targeting of specific subgroups for intervention purposes.

With respect to condom use, in our study, a much lower proportion of sexually active respondents reported consistent condom than the 42% reporting it with a non-regular partner in the KAPB study. Our figure is also lower than the 21% reporting consistent condom use with all partner types among 13-19 year old street teenagers in the Kathmandu valley. (95) This data further supports our hypothesis that our sample should have the greatest risk for HIV.

As for anal sex, a lower proportion of sexually active youth in our study reported this, compared to the 28% in the KAPB study. However, in theirs, 54% of 12 year olds but only 9% of 17 year olds reported anal sex, and it was described as a game played among younger boys. This suggests that participants in both studies may have responded in relation to their current practices. Older participants may therefore have not reported having anal sex, even if they had done so in the past. This explanation could also account for our older median age of first sex, if younger respondents were more willing to describe anal sex as



their first sexual experience. Furthermore, participants may or may not have included forced anal sex when responding to this question.

Survival sex was also uncommonly reported in our study, compared to the 28% of Kathmandu boys reporting it in the KAPB study. However, as participants had already responded to questions regarding commercial sex partners, their responses to this question likely represented the other dimensions of survival sex, such as having received anything for sex.

Finally, a much higher proportion of youth in our sample reported having ever injected drugs than in the KAPB sample (23% vs. 7%), although the prevalence of needle sharing was similar. Our found prevalence of IDU is very high, even when compared to the international literature, where generally no more than 6% of street youth report injecting drugs. (15-18) One exception to this is in homeless youth in West Coast American cities, which show consistently higher levels of lifetime IV drug use (15-45%). (14;19;20)

In summary, respondents in our study showed high rates of HIV risk behavior, with respect to higher risk partners, higher risk sex, inconsistent condom use, and IDU behaviors. These youth are clearly at higher risk for contracting HIV than those of the general Nepalese population, based on the younger age of first sex, the greater proportion of youth who had had sex before 15 years of age, the greater number of sexual partners, and the substantially higher likelihood of having had a commercial sex partners in our sample. Furthermore, the less reported consistent condom use and the hugely more injection drug use reported in our sample is consistent with our prediction that our sample would have a greater behavioral risk for HIV than that found in the KAPB study. In conjunction with the knowledge of uneven distribution of risk, the evidence confirms our theory that our sample captured one of the highest risk subgroups of the estimated 30,000 street-based youth in Nepal.

#### **5.2.1.4 Connectedness**

Due to the lack of studies that have explored connectedness and other psychosocial variables in Nepalese youth, we compared our results to the international literature. While past research has suggested lower overall connectedness in street adolescents, (21;68) due to our large difference in reported connectedness between peer, parent, and NGO worker categories, these facets are examined separately.

Connection to peers, specifically, has been most often studied in students. In an American study, mean item scores of a Supportive Friendships scale were  $3.22 \pm 1.21$  out of five in their first wave of interviews. (86) In a study of 13-17 year old ethnically diverse American students, the mean score on their Peer Affiliation scale mean was  $8.97 \pm 3.91$  out of 20. (31) Although different measures were employed in these studies, it appears that connection to peers in our study is at least as strong as in the aforementioned samples.

Some studies have measured connectedness to family amongst street youth. One study of 12-20 year old recently homeless American and Australian youth asked about bonds with each of four types of family members. (98) Their reported mean score of  $23.59 \pm 9.21$  out of 40, which suggested that many adolescents selected 'somewhat' as a description of their connection, seems comparable to ours, where the most common response for connectedness to parents was 'not very much so'. Also, a study of 2328 community-based Zambian youth, (30) where only 46% attended school, connection with parents was similarly low with a mean score of 0.2 out of one on their index. Levels of parental connectedness for in-school, and likely at-home youth, are not surprisingly higher. First, in Liu's study of Thai vocational school students, (29) 48% of boys reported having a family member as a confident. Second, sexually active Americans had mean item scores of  $4.07 \pm 0.65$  out of five on a Parent Connectedness scale in the first study wave. (86) Finally, in Magnani's study of 13-18 year old Peruvian students, (32) 64% and 32%, respectively, reported they were 'always' or 'almost always' important to those they lived with, while only 4% reported 'never'. Overall, the low proportion of respondents expressing connectedness to a parent in our study seems comparable to global samples of homeless and disadvantaged youth, but is lower than in samples of in-school and at-home youth.

Finally, connectedness to clubs and organizations has also been studied more often in students and at-home youth. However, in Magnani's sample of Zambian youth, where only 46% attended school, (30) less than 20% had ever talked with a peer educator, and only about 32% of males were affiliated with a club or organization. These low figures may be comparable to the one in four youth in our study who felt connected with a staff member of an NGO. By contrast, in Thompson's study of 6<sup>th</sup> to 10<sup>th</sup> grade American students, (69) 71% were involved in some kind of school club or organization.

Overall, our data are consistent with the evidence that street and out-of-school youth, both in and out of Nepal, tend to have less connection with parents and community workers than other samples, but maintain strong social ties with their peers.

#### **5.2.1.5 Perceived peer norms**

The four in five Nepalese street youth in our study who believed that at least half of their peers had had sex was higher than the 54% reporting it in the KAPB study. (11) Similarly high perceptions of peers sexual activity were found in community-based Zambian youth, (30) where 72% reported that their friends had had sex, and in 9-15 year old publicly housed African American children, (24) where 43% of boys believed that most, and 27% of boys believed that some of their friends had had sex. These figures are lower in samples of in-school youth, for example as only 6% of Peruvian students said that many of their friends had had sex, while the remainder said that none or a few of their friends had done this. (32) As with connectedness to parents, street youth, out-of school youth, and poor youth seem to share greater perceptions that their peers have had sex, when compared to in-school youth.

There is less corresponding data for the perception that peers have had survival sex, and that they use condoms. While in our study, almost all boys said that at least a few of their friends use condoms, in one of publicly housed American boys, (24) only 64% believed that at least some of their friends ever used them. Again, whether this is due to age differences, group norms, or implemented interventions, is unknown. Although consistent condom use was rare amongst our sample, our very high figure in this section suggests that Kathmandu street boys know of them, and that their use is not uncommon within the peer groups.

#### **5.2.1.6 Social Support**

The Social Provisions Scale has been used with a variety of American samples of different races and financial statuses. In the original study of college students, teachers and nurses, (99) the mean score was  $82.45 \pm 9.89$ , with scales on the subscales ranging from  $12.82 \pm 2.28$  in Nurturance to  $14.43 \pm 1.91$  in Reliable Alliance. In data collected up to 2001, (100) caregivers of different races completed the instrument, with scale mean scores averaging  $78.85 \pm 10.37$ . Subscale means ranged from  $12.53 \pm 1.99$  in Social Integration to

13.67  $\pm$  2.05 in Reliable Alliance. These figures are all higher than the total scale mean in our sample, as well as for all of our subscales. However, this is not surprising as our sample was drawn from youth who may not benefit from the family, school, and workplace support that these others might.

Social support has been studied in samples more similar to ours. First, perceived social support in ethnically diverse and primarily poor American students had a scale mean of 20.41  $\pm$  7.26 out of a possible 35. (31) Next, a study of Texan homeless youth used the PRQ85-II, and found a mean score of 105.1  $\pm$  16.2 out of a possible 175. (21) By taking into account number the differences in maximum possible score, it seems that the level of social support in our study was comparable the above ones. In contrast, a study of 15-17 year old Nepalese female students reported a high mean scale score of 135.28  $\pm$  14.2 on the PRQ85-II. (101) This difference may be due to the population in the latter study being female (who have previously shown more social support than males (99)), being Nepalese (where family is culturally very important), or because the students were in-school and living-at-home youth. It is not surprising that street youth, who are denied access to home, parental and school support, would have lower levels of overall social support. These results suggest that Nepalese street youth perceive a more similar level of social support to poor youth and to street youth in general, than to more privileged samples within their same country.

#### **5.2.1.7 Self-Efficacy**

When compared to a study of 15-24 year old Cameroonian males, (28) although our respondents perceived themselves as more able to buy condoms, and while many also felt confident in being able to use one, the 64% percent of youth in ours who said that they were at least medium sure that they could insist on using a condom, even if their partner preferred not to, is lower than in that one, where 86% and 89% perceived that they could convince a regular partner and casual partner to use one, respectively.

In Boyer's study of 985 ethnically diverse and likely poor American adolescents, (31) a seven item scale assessed the extent to which youth could use condoms at each sex, with a mean result of 17.15  $\pm$  6.43 out of 35. Although the questions used are not reported, this appears to be slightly lower than, but similar to our mean on the self-efficacy to use condoms subscale. One study which yielded almost the same levels of self-efficacy as ours

was one of 15-24 year old in and out-of-school Ethiopian youth, (26) which included a six item scale for self-efficacy to acquire and use condoms correctly, and reported a mean of  $16.4 \pm 5.3$  out of 30 for males. (26) Similarly, in Rew's study of Texan homeless youth, (21) Jemmott's 14 item self-efficacy to use condoms scale was used. Here, the mean score was  $44.9 \pm 7.9$  out of 70.

In comparison, one study which used the same scale as us, demonstrated higher levels of self-efficacy in their sample. In Hale's study of unmarried, sexually active college women, (33) the overall item mean was  $4.14 \pm 0.56$ . Although the populations were greatly different, self-efficacy in our study was lower both overall and on each subscale.

These findings reinforce that as with other psychosocial variables, overall self-efficacy seems to be lower in populations of poor, street, and out-of school youth.

## **5.2.2 Multivariate results**

### **5.2.2.1 Area interviewed**

The area of Kathmandu from which youth were recruited became a significant predictor of HIV risk in multivariate analysis. Interpretation of this finding is complicated, as aggregation of locations into quintiles may have averaged out significant differences amongst the 52 sub-areas. Still, our results suggest that street youth in Basundhara and Putalisadak areas had greater odds of being classed as higher risk for HIV than those in Kalimati, Baneshwor, and Patan areas. Group differences were explored (area vs. all others) to provide clues to specific sources of risk by location of Kathmandu, and are qualitatively discussed here.

The finding that youth in Basundhara had relatively higher risk for HIV is interesting, as it is the quintile of Kathmandu housing the smallest proportion of street youth. Street youth here were significantly more likely to report never using NGO services. This is not surprising, as boys from this area were most often recruited from Balaju, near the bus park, which is relatively lacking in proximity to local NGOs. Therefore, youth in this area seem to not be adequately reached by outreach and intervention services. Some of these youth's increased risk might be explained by the fact that Basundhara was the only quintile where most interviews were completed by non-street youth. Still, as it was also the only one

where more youth were classed as higher than lower risk, actual risk for HIV in this area is clearly high.

The second area of relatively high risk, Putalisadak, or the central area of Kathmandu, included many youth from the Putalisadak, Dilibazar, and Sundhara sub-areas. While boys in this area were more likely to have had sex with an HIV positive partner, with a CSW, and while intoxicated, they were also more likely to have consistent condom use with commercial partners. The greater exposure to commercial sex is likely due to this downtown area including many restaurants and bars, as well as being close to the most important tourist area of Kathmandu.

Third, the first area of relatively low risk for HIV was Kalimati, which although is well covered by NGOs, all of our included interviews were taken from street locations. This area included the high-concentration areas of Swoyambunath temple area and Dhalko. Boys in this area seemed to have more severe homelessness circumstances, as of youth who knew how long ago they left, significantly more had left home over two years ago. Also, more slept on the streets or in another public place, and had experienced victimization.

In contrast, those recruited from Patan, most often from Lagankhel Bus Park and around the temples of Durbar Square, tended to be younger and had left home more recently. Although our evidence suggests that although this group currently has lower risk for HIV, significantly more youth here reported engaging in higher risk activities with peers and citing getting drugs or avoiding the police as priorities. While the lower prevalence of IDU in this area suggests these behaviors are primarily related to glue-sniffing and other non-injection drug use, there is much potential for youth's behaviors in this area to progression to more risky ones such as IDU.

The final quintile of relatively low risk was Baneshwor, which included Tilganga and other locations around Pashupatinath temple area. Significantly more interviews here were obtained from NGOs, including from our collaborating one. Our data suggests that the most relevant theme in this quintile is decreased condom use. Although this area was found to have lower risk, boys here perceived that less of their peers used condoms, and they felt overall lower self-efficacy to use condoms when compared to the other quintiles. Accordingly, they showed significantly less consistent condom use with commercial partners, and were more likely to have had recent unprotected sex with a CSW and while

intoxicated. It may be that group norms in this area hinder condom use. If so, the potential for high HIV risk exists, as boys who have not yet initiated sex may be already influenced by such attitudes, which may affect their practices when they do so.

#### **5.2.2.2 Demographic factors**

Participants who were 20-24 years of age were significantly more likely to be classed as higher risk for HIV than those aged 15-19. This finding is consistent with other studies of street youth, which have found positive correlations of age with more IV drug use, with decreased condom use, and with overall HIV risk. (14;17;54) However, it conflicts with evidence from Nepal, where street-based boys aged 12-14 were significantly less likely to use a condom at last sex than their older peers. (11) In our study, as no association was found between age group and consistent condom use with non-regular and commercial partners, previous explanations such as a cohort effect in young people who are using condoms more often, (14;24) or to the development of more stable relationships with age where condoms are less likely to be used, (24) may not hold. However, exploratory chi-squared analysis showed that older participants were significantly more likely to have had more than five lifetime partners and to report using injection drugs. Therefore our finding may be either due to that older youth felt more comfortable disclosing their sexual and IDU history, or more likely, as our measure was based on lifetime experience, that older youth had cumulatively more sexual and drug-related opportunities and experiences, and therefore had more person years at risk for HIV.

In this study, being part of a marginalized ethnic group was not associated with HIV risk. Although reasons for coming to the street and experiences on the street may differ between these groups, and are beyond the scope of this study, it seems that overall, HIV risk is not greater in those born into a lower caste group.

Similarly, marriage was not protective of lifetime HIV risk. This also conflicts with the previous KAPB study in Nepal, although they included only sexually active boys in their measure, where married respondents were significantly less likely to be involved in high risk sexual behavior than those who had never been married. (11) Although causality cannot be inferred from our cross-sectional design, we attribute these results to primarily being experiences before marriage. Also, street youth may have conceptualized marriage as being a very stable relationship for a period of time, which would explain why a small

number expressed having had more than one wife in his lifetime. Discussions with NGO staff suggested that some street-girls live in marriage type relationships with street boys, with one reason being for protection. A risk measure of current, rather than lifetime risk, as well as a more longitudinal study, would help to detangle these results.

Last, in this study, sexual risk was neither related to current school attendance, nor to level of completed education. Also, knowing the two most important means of HIV transmission became non-significant in regression analysis. Knowledge of HIV has been likely studied more than any other variable, despite findings from all over the world usually converging to the same result that although youth have good knowledge of HIV/AIDS, they continue to engage in risky behaviors. (21;24;31;32;56;57) Therefore, our data adds to the mass of evidence that knowledge is not sufficient to explain behavior.

### **5.2.2.3 Exploitation and abuse**

In our study, participants with a history of sexual abuse were more than six times more likely to be classed as higher risk than those who did not have this history. This finding is consistent with the literature, which has repeatedly associated sexual abuse such factors as early sexual debut, unprotected sexual intercourse, multiple sexual partners, engagement in anal sex, higher rates of STDs, sexual revictimization, and higher scores on HIV risk indices. (17;18;23;58-61) In our study, the definition of sexual abuse did not specify any particular perpetrator, and broadly included any kind of unwanted touching or sexual acts that the respondent perceived as wrong. First, as we did not specify age of sexual debut to be one's first consensual intercourse, the occurrence of sexual abuse explains the very early age of first sex for some participants. However, we did specify that it happened before coming to the streets. Exploratory analyses showed that youth with a history of sexual abuse were more likely to have had sex at or before the age of 12 (where this may or may not have been the abusive situation itself) and to have had survival sex or forced sex since coming to the streets. These findings support the theory that youth with a history of sexual abuse are more vulnerable to future exploitation on the streets.

Due to factors such as shame, guilt, and fear, we infer that the actual prevalence of sexual abuse is likely much higher than the one in ten boys reporting it in our study. This inference is supported by a previous study of street-living and full-time street-working children where 92% were boys. (87) As trafficking and sexual abuse were their focuses,



researchers spent much time developing trust with respondents. Here, one-third of street boys reported sexual abuse and 21% of all respondents said that many or most of their friends faced it.

The idea that sexual abuse might occur within the family context is not openly discussed in Nepalese culture, and is often denied. The confirmation that it may in fact be rare is supported by the aforementioned study, where while two thirds of street youth had been mistreated at home, most often by stepmothers, stepfathers, or by alcoholic parents, this abuse was almost universally physical or verbal, and where only one girl out of 100 respondents reported abuse of a sexual nature. (87)

More often, sexual abuse amongst street children has been attributed to tourists, as an estimated 5% of street children have been abused by foreign pedophiles, and where two thirds of street youth believe that this group is the most common perpetrator. Nepalese street children have expressed that most often, tourists attract them through the provision of money, clothes, accommodation, medicine, food, or sympathy, and that exploitation occurs after a bond of trust has been developed. (87)

The other source of sexual exploitation on the streets was discussed to be by older boys, including by street junkies, as well as by the leader of the group of street children. While these group leaders, who are often adults who grew up on the streets themselves, can protect and assist younger children, such as through pooling earnings to buy food and cooking fuel, they can also be the ones physically forcing them into unwanted sexual situations, or acting as brokers who receive commission for recruiting them into marginal work, drug trafficking, and into the hands of pedophiles. (87)

Interestingly, exploratory analyses also showed that youth with a history of sexual abuse were more likely to use NGO services often or every day, and to feel connected to an NGO worker than boys who had not been abused. This could be in part due to some NGOs 'rescuing' youth from exploitative situations, or to youth who have had such experiences seeking help themselves. If the latter explanation is true, it is important to learn whether, and subsequently ensure that they can and do discuss this abuse with an NGO staff member. This already existing contact between abused street youth and NGOs is surely positive, as it is a prerequisite to their appropriate care, treatment, and protection.

Our finding is pertinent for future investigation, as it empirically extends the role of sexual abuse as an independent predictor of HIV risk for the first time, from the international literature to youth in Nepal, as well as reinforces the idea that the later experiences and behaviors of boys can also be more detrimental amongst those with a history of sexual abuse. This variable is also important as it has been linked to relevant psychosocial variables such as lower levels of connectedness and social support among homeless adolescents, (60;68) therefore it may partially explain some of the lower levels found in this population.

Another variable representing exploitation in our study, having being victimized since coming to the streets, was contrarily not related to behavioral risk for HIV. Because the prevalence of this was much higher than for sexual abuse, as over half the boys reported experiencing it, although sexually abused participants may be at risk for future victimization, it seems that within the street environment both boys with a history of sexual abuse and those without one are at risk for victimization on the streets. Qualitative discussions suggested that for older boys who had been on the streets for a while, most of the violence they experience would be non-sexual in nature. However, key informant interviews and past research surfaced occurrences of exploitative sexual acts by authoritative figures in the community and by tourists, as well as non-consensual sex imposed upon younger boys and newcomers to the street. (87;102) Therefore, if we had included more girls or younger boys in this study, the effects of victimization might have been more closely linked to risk for HIV.

Finally, based on the low reported prevalence of forced sex and survival sex in our sample, two other variables associated with exploitation and abuse, it appears that many of the sexual experiences of street boys in Kathmandu are voluntary. However, as sexual abuse has been attributed in this population more often to masturbation, oral and anal sex, as well as to experiences such as nude pictures being taken, (87;102) this first figure may be due to youth considering only vaginal and perhaps anal sex when responding to this question. Still, the indication that many voluntary sexual experiences occur, is positive both in terms of these boys mental and physical well-being, but also because intervention efforts are more easily implemented in situations where one feels, and is in control of his own sexual

decision-making. If sexual activity within this population can be seen as a rational choice, interventions created for in-school and at-home youth may be more generalizable to them.

#### **5.2.2.4 The family context**

Family relationships have immense effects on behavior and outcomes for youth, and can simultaneously be a protective factor, in the realms of communication, connectedness, discipline, guidance, protection, and economic support, as well as a risk factor, in the cases of adult substance use, conflict, abuse, and neglect. (70;86;98) For street youth, these negative characteristics complicate intervention efforts, as attempting to send a youth home might put him at risk of further abuse or emotional harm. (98) Accordingly, a Nepalese study showed that amongst youth who did not want to be reunited with their families, the majority stated fear of continued neglect and of physical or verbal abuse as reasons. (87) In our study, reason for leaving was not related to risk for HIV.

In contrast, time since leaving home had an important overall effect in influencing risk for HIV. With more time on the street, family contact and support, and parental control and responsibility tend to disintegrate. (103) Studies have shown that decreased parental monitoring and availability can have detrimental effects on both street and non-street youth's sexual well-being. (11;24;32;62) Accordingly, exploratory chi-squared analysis of our data showed that youth who had been on the streets for more than two years were significantly more likely to have had difficulty meeting food needs, to engage in higher risk activities with peers, to have experienced victimization, and to be sexually experienced. It should be acknowledged that much of this association may be due to being in an environment where risk is normalized, and may again relate to person years at risk. Still, as these youth who had been on the streets for a longer time also showed significantly less connection to a parent, the increased risk from a longer time on the street may partly relate to family variables, as well as to contextual ones. As a descriptive Nepalese study showed that younger and more recently homeless children were more likely to want to be reunited with family, (87) even a deteriorating or weak family bond may be important to build on for intervention strategies. (98) Therefore depending on their individual circumstances, such youth might be successfully reunited with their families before becoming involved with the marginal, deviant, and other higher risk aspects of street life.

Finally, in this study, connectedness to a parent became non-significant as a protective factor once included amongst other variables in the regression equation. Current family contact, when entered as a replacement for parental connectedness was also non-significant. This contrasts with findings that having close relationships to a parent or primary caregiver, having a family member as a confidant, or feeling that one's parents were there when he needed them, are protective of various risk behaviors, including less unprotected intercourse, fewer sexual partners, and later sexual debut. (29;50;71;98) Our finding suggests that on its own, parental connectedness can be important for street youth's sexual health, but that in the larger picture of their physical and social environments, this factor is less relevant than others.

#### **5.2.2.5 The NGO context**

The benefit of involvement with clubs, organizations, and extracurricular activities has been demonstrated in studies of non-street youth with respect to lower levels of risk behavior. (71) For street youth, as most are not in close contact with their homes and schools, NGOs may be their only adult source for information about the multitude of sexual issues they face through adolescence, for example with respect to puberty, relationships, sexual abuse, HIV and STIs, and to available health services and resources. (11) At these locations, youth also obtain both practical services, such as shelter and medical treatment, have a safe place to spend their time, and have the opportunity to connect with other youth and staff members. Although a review by Grossman (104) did not consider street youth specifically, it compiled that of youth who are involved in youth programs, those who reported being somewhat or very close to a mentor ranged from 73% to 96%, that 55 to 89% of youth could go to at least one staff member for help or support, and that in one study, 87% said that staff care some or a lot.

In the general youth population, non-parental adult connectedness can stem from teachers, neighbours, counsellors, and leaders of extracurricular activities. Street youth may find attachment to members of the community who practice and support responsible behaviors, which can protect them from risk, or to those who take advantage of them, or who permit and promote risky behaviors, which can compound it. (34;50) For example, the Nepalese KAPB study discussed the roles of the Kawaad with respect to condom distribution, prevention of abuse, provision of a sense of belonging and connection, but also

to provision of drugs, maintenance of youths' dependence, and normalization of high risk behavior. (11)

In Kathmandu, there are many NGOs that provide services to street youth. In this study, being recruited from an NGO compared to from a street location became a non-significant factor in predicting HIV risk in the multivariate regression model. Similarly, when substituted into the regression model, extent of NGO services used was not predictive of risk for HIV. This does not necessarily contrast findings that service users represent a lower risk subpopulation of street youth. (14;20) Instead, we suggest that location recruited and extent of services used may in fact be proxy indicators for an important psychosocial predictor of HIV risk: connectedness to a community worker.

Relationships between street youth and NGO staff can be more caring and positive than these other naturally forming adult relationships in the street community. Beyond an NGO's provision of services, street youth in our study who did not feel connected to a community worker were significantly more likely to be classed as higher risk for HIV than those who felt that connection. Exploratory chi-squared analysis showed a wealth of protective associations of this relationship. Youth who felt connected to a community worker had more consistent condom use practices with both commercial and non-regular partners, were less likely to have engaged in recent unprotected sex with CSWs and while intoxicated, and were less likely to have injected drugs. While we cannot attribute causality to these relationships, the hugely beneficial correlations suggest that this NGO worker-street youth relationship may be a key target for interventions.

Our finding is in-line with the literature that connection to non-parental adults in the community is important for development and health, and that it has been linked to decreased behavioral problems, sexual risk-taking, and drug use, as well as to increased self-esteem, life satisfaction, and overall health and well-being. (104) Not always a lesser quality substitute to parental connection, one benefit to this non-parental relationship is that the youth can retain their independence, while still obtaining practical and valuable advice from a net-worked, knowledgeable, responsible and experienced adult. (104) Therefore, these relationships can be genuinely caring, can provide stability if they are more long-term, and can translate to positive mental and physical health outcomes, as well as to social resource benefits such as advice, referrals, and job opportunities. (104) Direct or indirect

psychological assistance can manifest with respect to self-esteem, anxiety, resilience to relationship problems, and likelihood of depression. (104)

American homeless youth who have self-reported disconnectedness from others, have also stated that connectedness with street outreach programs was an important factor in maintaining their health. (68) Therefore, relationships with NGO workers have the potential to make up for some of the connectedness and social support that these youth lack. Our finding also emphasizes the fact that the role of an NGO worker can be beneficial beyond a service perspective, to another dimension that being a friend or a mentor to these youth might be even more protective of behavioral risk.

#### **5.2.2.6 The peer context**

Across street and non-street adolescents, through the adolescent years, peers hold increasing influence over family in their everyday lives. (63;98) The peer group may be the most important and influential social aspect of street youth on their sexual and drug-related practices, and consequently, on their risk for HIV. As they are often excluded from the school and family connectedness enjoyed by other youth, one's life on the street, including with regard to both work and free time, almost always affiliates back to a street youth's social circle.

First, our study provides support for a shortened future time perspective in street youth, (21;56;66) and for the idea that their unsafe surroundings and struggle to meet basic needs can result in a lack of concern for health risks, a careless attitude toward danger, and a desire for instant gratification. (18;42) While youth in our study who did not have a stable residence were not at increased risk for HIV, those who had days with little or nothing to eat had significantly greater odds of being classed as higher risk for HIV than those who had not had days like this. This finding is congruent with the evidence that difficulty meeting basic needs is associated with higher rates of sexual activity, (18;53) and with a study of Washington street youth, where higher scores on an HIV risk index were predicted by severity of homelessness variables including spending the night in a public place, sexual victimization, support from illegal activities, and for males, going hungry. (17) Based on the high intercorrelations in our study between meeting basic food needs and higher risk activities, priorities, and experiences of victimization, it seems that perceived needs, such as in the context of drug addiction, and individual priorities, can also override the likelihood

that street youth will engage in positive health practices. Because we cannot attribute causality to this association, we do not know if youth who have increased severity of homelessness tend to gravitate towards higher risk activities such as drug use, whether it is the substance use itself that leads youth to prioritizing this addiction over basic food needs. Still, this association suggests that many youth in our study do not avoid risky situations, and that they favor short-term benefits over long-term consequences.

Second, youth in our study who reported higher risk activities with peers, including using or selling drugs, stealing, fighting, or going to cabin restaurants, had more than three times greater odds of being classed as higher risk than those who reported only safer activities such as playing games or sports, watching movies, and playing cards. Furthermore, when substituted into the regression equation, both mentioning marginal or illegal activities as a means of meeting financial needs, and mentioning getting drugs or avoiding the police as a priority, were also independent risk factors. Although these variables and HIV risk may have shared some common variance, (78) for example through IDU which would reflect in both measures, as they were correlated but not highly enough to be considered collinear, they are clearly important. Also important is the finding that HIV risk was unrelated to both youth mentioning maintaining their own sexual health as one of three priorities, and to ranking the maintenance of their own sexual health as very important. One reason why youth's risky priorities held more effect on actual behavior than safer ones could be that even where youth considered maintaining their own health as important, they may not have felt in control of ensuring this in the context of their lives on the streets.

An important and related theme with respect to the two above topics is the clustering of risk behavior within a smaller subgroup of our sample. In our study, the closely intertwined relationships between meeting basic needs, higher risk activities, priorities and experiences on the street, and actual risky behaviors in a sexual and injection drug context, provide support for previous research, including for Problem Behavior Theory. As risk behaviors tend to cluster together, both direct (actual or perceived sexual) and indirect (general deviant non-sexual) peer attitudes and practices can influence adolescent's risky sexual behavior. (62;88) The risk from these behaviors is compounded if a person's actions overlap different risk categories. For example, one study of homeless youth in Chicago

showed that having ever injected drugs was associated with increased likelihood of being involved in prostitution, and to have had anal sex and high risk partners. (18) This concept has been brought up in Nepal, where it was suggested that risky behaviors such as IDU, CSW, and inconsistent condom use clustered together in street youth, hence greatly enhancing risk. (11) An inclination towards general risk-taking has been cited as an explanation for why youth who engage in one risky behavior are often the same ones to engage in another, and therefore for the association of peer deviance with higher risk for HIV. (78)

Next, in our study, connectedness to peers was unrelated to HIV risk. This is interesting as the literature has shown correlations in both directions. Detrimental effects have been found, with youth having a close friend as a confidant predicting sexual experience in Thai males, (29) with number of friends being correlated with number of lifetime sexual partners in Zambian males, (30) and with more social activities with their peers being related to greater risk for HIV in American students. (31) Alternatively, while the protectiveness of general connectedness has also been discussed, such as through supportive peer relationships being associated with fewer sex partners, it has also been suggested that this relationship might not hold up if peers use substances extensively, and especially where parent support is not available. (86) These examples demonstrate the profound intercorrelations of connectedness within the peer group. While some aspects may be protective, others are detrimental. It could be that our null result found is an amalgamation of significant results in both directions that requires detangling in order to be understood, and that therefore, the protective effects of general connectedness may have been offset by group norms, beliefs, pressures, and higher risk activities.

Finally, the perceptions that one's peers have had sex or use condoms, regardless of whether that belief is true, have been greatly studied in the international literature, and have been found to be important predictors of HIV risk. (24;25;32;53;72) In our study, the perception that one's peers had engaged in survival sex was not related to risk for HIV, which is not surprising based on the relatively small role it played in our sample's lives. Also, the perception that one's peers used condoms was unrelated. Had our outcome variable been, for example, consistent condom use, this variable may have been more relevant in predicting behavior. However, youth who perceived that at least half of their



peers had had sex had almost five times greater odds of being classed as higher risk for HIV, than those who believed that less than half of their peers had done so. Chi-squared analysis supports the presence of risky peer group norms, as those who believed that at least half of their peers had had sex were more likely to engage in high risk activities with their peers, to have higher risk priorities, to have had sex themselves, to have had five or more sexual partners, to have had a commercial sex partner, and to have injected drugs. The literature has accordingly illustrated similar behaviour within peer groups, including in street youth, with respect to values, attitudes, beliefs, and survival strategies. (14;86) It has also been said that street children incorporate other street youth as models, in order to meet affective needs. (38) Therefore our finding could either be due to youth choosing friends who engage in certain behaviors or to youth modeling behaviors of those they associate with. (31)

#### **5.2.2.7 Social support**

In this study, as consistent with the literature amongst primarily in-school and at-home youth, social support was significantly and independently protective of risk for HIV. This is a very important finding, as social support has been more often examined in females, has been rarely studied in street youth, and where it has included them, has most often been conducted in American samples.

As social support is a multi-faceted construct, levels of it have been found to vary by the type of sample or by the situation addressed. For example, while college students showed more Social Integration, teachers and nurses showed more Worth and Nurturance. (99) Different relationships seem to foster different components of social support as well, with teachers, mentors and parents providing more Guidance, with family members providing more Reliable Alliance, with offspring and spouses accepting more Nurturance, with friends providing more Social Integration, and with spouses, family and friends providing more Attachment. (99) A final difference is that Guidance and Reliable Alliance are more related to stressful life events, and are most often provided by teachers, mentors, and family members, whereas the remaining four are related to cognition, cognitive processes, self-efficacy, and coping, and are beneficial in both times of high and low stress. (99)

In our study, participants reported the mean-item highest social support in the Attachment and Guidance subcategories, while the lowest social support was expressed in the Worth subcategory. This higher score on Attachment is not surprising, as it is commonly derived from relationships with friends. However, the relatively high score in Guidance, combined with the fact that these youth do not appear to have close ties with adults either in their family or community, suggests that in the absence of such a mentor, peers (possibly older ones) take on that role. (99) Because this factor is especially important in stressful life events, perhaps the difficult situations of street youth have led them to obtain this dimension of social support by alternative means. The lower score in the Reassurance of Worth category is interesting as this concept has been said to be mediated by cognitive processes, and is related to self-efficacy, for example that if one is provided with this inputting of confidence, his belief in his coping skills, and therefore his actual coping would be more successful. (99) Therefore modification of this facet may be an important window for intervention.

Based on our data, general social support appeared to be an accurate and sensitive predictor of HIV risk, as lower scores on both the overall scale, and on each of the subscales of Nurturance, Guidance, Reliable Alliance, Worth, and Social Integration were predictive of increased HIV risk. The only subscale proving unrelated to HIV risk was Attachment. Interestingly, as this subcategory relates the most closely to connectedness, and as connectedness to peers was also unrelated to risk for HIV, perhaps by the same explanation, the detrimental effects of peer relationships offset some of the benefits of their provided connectedness, thus yielding this null result. However, then we might expect the protectiveness of Social Integration to be offset, which was not shown here. It could also be that a significant protective effect of Attachment does exist, but that we did not have enough power to detect it.

Our data suggests a detailed profile of a street youth who is most protected from HIV. This youth is one who has close relationships that provide him with a sense of emotional security and well-being and who has people around him who enjoy the same activities as he does. He believes that others view him as competent and that they respect his skills and abilities. He may also feel that somebody needs him to care for them, and that this person relies on him for their well-being. Finally he has a trustworthy person to turn to for

advice if he was having problems, and upon whom he could count on in case of an emergency.

We attempted to determine the most important sources of social support in street youth, as many are excluded from traditional ones, including from those relating to family and school. Accordingly, chi-squared analysis of our data showed that the small population of street youth who were married, who slept at home with family, in paid accommodation, or in a night shelter, and who were currently attending school, perceived more social support than their peers. Qualitative discussions yielded the finding that as many street youth come to the streets for independence, some may be more prone to choosing a more isolated life-style which excludes supportive relationships with these players, and that therefore their lower overall social support can be a personal choice. This is consistent with an alternative hypothesis, that instead of social support not being available in these youth's context, perhaps they were unable or unwilling to generate and maintain available supports. (25) Clearly, the social relationships themselves, as well as their potential for influencing HIV risk, are both numerous and complex. Most commonly, street youth's sources of social support should include peers, community workers, employers, hotel owners, and kawaad owners. Two findings suggest the relative importance of peers' roles in street youth's perceived social support. First, our data showed that more social support was significantly associated with connectedness to a peer. Second, youth who had been on the streets for more than two years reported more social support than those who had been there for a shorter time. Therefore, it is likely that relationships with peers, which would be likely to strengthen over time on the street, are one of the most important sources of social support in street youth.

The juxtapositions between the protective benefits of social support, its affiliation to peer sources, and to the associations between deviant peer norms and HIV risk, create more questions than answers. As suggested for connectedness, some benefits of social support may be offset by the presence of risky norms and behaviors inherent in the street and peer context. These complexities denote the need for a deeper understanding of Nepalese street youth's intertwined social environment and of their effects on health-related practices. Still, this study is the first to provide empirical evidence for the important role of social support in predicting HIV risk behavior in non-American street youth.

### **5.2.2.8 Self-efficacy**

In this study, it was notable that while overall self-efficacy was not related to risk for HIV, self-efficacy to use condoms was an important protective factor, even when included amongst other variables in the multivariate regression model.

Two important themes resulted from this variable. First, the finding that perceived self-efficacy to use condoms was associated with actual consistent condom use with both commercial and non-regular partners is important as it demonstrated a direct link between cognitive perception and actual behavior, and therefore suggested its modifiability. The second was that significantly higher self-efficacy scores were found for participants who had never had sex, and therefore where their responses represented their hypothetical perception of condom use if they were to do so. On one hand, this optimistic perception may not be accurate, for example as they may be somewhat naïve to the power of difficult sexual circumstances in influencing condom use. However, more positively, it demonstrates one's possible intention to use condoms if he were to begin having sex. Although we cannot infer future behavior, if higher self-efficacy amongst sexually active respondents is predictive of actual behavior, perhaps higher self-efficacy amongst those who have not yet had sex may be protective for them in the future.

For interpretation of the relationship between self-efficacy and HIV risk, individual items were examined as they represented distinct specific situations that could help us to better understand risk. None of the self-efficacy to refuse unwanted sex items, or to the ability to communicate with sexual partners items were significantly related to HIV risk. However, four variables in the self-efficacy to use condoms were protective of it. This included the first question on this subscale, being able to use a condom each time one had sex, which is important as it represents all-encompassing confidence for consistent condom use.

The second significantly related item was being sure of one's ability to use a condom after using a drug. This might be explained by the theory that motivation to use a condom can go untempered by drug use amongst participants who had planned beforehand to use one. (15) The idea that drug and alcohol use is detrimental to safer-sexual behavior is founded by logic, and has been previously demonstrated in the literature, (11;34;42;48;50) although no effects and even opposing effects have also been found. (15) In Nepal, glue

sniffing has become very popular amongst street-children, with a 2002 study showing that three in five respondents used it, and that 86% had seen their friends doing so. (35) Many youth start using this drug due to peer pressure, to fit in, to ward off hunger or to forget their life circumstances, and the habit is maintained as it is cheap and readily available. Unfortunately, its effects can induce youth into violence and fighting, can result in other accidents, and over time, may serve as a gateway to harder drugs. (35) As our study demonstrated that a large proportion of youth had ever had sex while intoxicated, and had had recent unprotected sex while under the influence of drugs or alcohol, this variable is clearly relevant to Nepalese street youth. A second comment to this finding is that as protection from HIV after using a drug did not extend to refusing unwanted sex, the importance of condom use as the most important intervention strategy amongst those who have already begun having sex, is supported.

The third and fourth important protective items, though not specifically related to condom use, were successfully added to this subscale in the modification of the SEA for Mexican adolescents to the current SEA-27. (91) The first was being sure that one could wait to have sex until he was married. As both married and non-married respondents reported low certainty to this statement, our explanation that risky sexual experiences of married street youth occurred before this union, is supported. The second was feeling sure that one could have sex with the same person their whole life. While intervention efforts in developing countries have drifted away from promotion of abstinence, due to changing social norms, this concept may still be important and practical in Nepal. On one hand, street youth are born into a society where traditional values of abstinence until marriage, and of a monogamous union with one life-time partner, are still very common in many areas. However, on the streets of Kathmandu, these principles are contested, for example as they are exposed to urban and western culture, and as they experience the riskier social norms of the street environment. However, emphasis of this means of protection from HIV should not be forgotten. Although relatively few youth reported high self-efficacy with respect to these two items, it seems that those who have it are more protected from HIV.

Next, based on the literature, the low levels of self-efficacy reported in our study suggest that street youth's environment limits their power and control to negotiate or to refuse sex, and suggests that they may be faced with low self-esteem and self-confidence, a

desire to conform, social pressures, and fear of rejection. (33;50;53;76) Based on our suggestion that many sexual experiences of the study population are voluntary, this may extend beyond the often cited exposure to exploitation and economic desperation, to the realm of peer norms and values, including pressure from friends to have sex, as well to dynamics between sexual partners, for example with respect to negative reactions of a sexual partner upon suggestion of condom use.

In contrast, chi-squared analysis of our data highlights many beneficial associations of this measure with condom-related practices as well as with broader protective factors. Those who felt more self-efficacy to use condoms were also significantly more likely to perceive that their peers use them, to perceive more connection to a peer and to a community worker, and to have a decreased likelihood of using injection drugs and of having shared needles in the last three months.

In conclusion, our results emphasize the role of self-efficacy to use condoms as an important protective factor against HIV risk.

### **5.3 *Discussion of methodology***

#### **5.3.1 Study design**

An important consideration is that the design of this study did not conform to a particular social-cognitive theory for studying HIV risk behavior, which is a strategy that has been used in similar studies. (28;30) Benefits of this decision include avoiding constraints on variables included, and avoiding assumptions of models that have not been validated for local culture. (53) Still, the importance of such theories is acknowledged, and related constructs were incorporated. For example, self-efficacy is important in Bandura's Social Cognitive Theory, in Azjden's Theory of Planned Behavior, and in the revised version of Becker's Health Belief Model. (105-107)

Second, the strategy of using a closed-ended multiple-choice questionnaire was beneficial as it allowed us to maximize consistency, especially in light of language barriers, as well as to minimize interviewer bias, as interviewers were unlikely to misinterpret participant's responses.

Two limitations to our design are acknowledged, and are common to most studies of street youth. (14-23) First, because it was cross sectional, the identification of causality and

of temporal trends is limited. In such studies, where cohort and longitudinal studies are very difficult to implement, we do not know, for example, whether demographic and social variables lead to increased risky behavior, or whether risky behavior alters the course of these other variables. (17) Second, our relatively small sample size meant that we may have lacked sufficient power to detect some real associations. However, it gave us more confidence in the significant results we did observe, as actual relationships might be even stronger.

Another limitation of this study relates to the lack of comprehensive data from female respondents. Despite knowledge of a higher proportion of street boys than girls in this area, and despite consequently prioritizing interviewing females, as consistent with prior research, it was very difficult for us to include a representative percentage, due to reasons such as their greater mobility and invisibility. (11) The one complete female interview was therefore excluded from the quantitative component of the study. Related, due to time constraints and language barriers, this study was limited in obtaining rich qualitative data. These issues are discussed with respect to their further investigation in Section 6.1.

### **5.3.2 Questions and instruments**

#### **5.3.2.1 Questions from Behavioral Surveillance Surveys**

The choice of incorporating HIV knowledge and risk behavior questions from BSS was beneficial for many reasons. First, these questions focus on risk behavior over infection cases, which is important in concentrated epidemics. Next, they are reliable, are tailored to at-risk sub-populations, and have been used in a range of global contexts, and often on a national level. Finally, the choice of these questions wordings was solidified as they had been successfully used in a Nepalese context, (11) which facilitated comparison of results within the target population, and, as the questions were designed to monitor HIV risk behavior over time, allowed for the examination for behavioral change.

#### **5.3.2.2 Global and recent measures of HIV risk**

The development of the global and recent measures of HIV risk was guided by recommendations from two review studies. (77;79)

One important consideration was the importance of distinguishing between partner types, due potential differing levels of risk and condom use between these groups, and therefore its relevance to motivation to use condoms and to intervention. (77;79) For example, sex amongst non-regular partners mean that history is less likely to be known, while sex amongst regular partners may involve less condom use. Another important specification was the operationalization of sexual intercourse as being vaginal or anal sex. While important in the spread of other STIs, oral sex was not included due to the very limited risk of HIV transmission from this behavior. (40) Therefore, this increases the validity of our measure, as it is specific to risk for HIV transmission.

A second strength of our design was that by including an associated recent risk question with each global risk measure, we could identify a specific risky situation, as opposed to a mere risk cluster. Here, condom use is attributed to a specific sexual act. Related to this, by factoring in frequency of unprotected encounters, we could better quantify risk.

A third important consideration was that for all of our recent HIV risk measures, we limited recall time to three months. (79) This is important in retrospective self-report studies, and perhaps particularly in groups such as street youth and IDUs, if their concept of time has become distorted.

One limitation of our measure is that it is portrays a snapshot of current risk, and can therefore not determine motivation to use condoms nor predict future condom use, for example in the case of youth passively using condoms at the request of their current partners. (77)

### **5.3.2.3 Composite measure of HIV risk**

The development of the composite measure of HIV risk was also guided by the above review studies, as well as by the examination of methods used in related projects. In this process, some important decisions were taken, and are described further here.

First, the decision to class any participants who had ever shared a needle into the higher risk category, regardless of his other behaviors, was taken due to this one time practice holding a very high risk of HIV transmission. (79) Second, sex while intoxicated was excluded as a higher risk type of sex, as its potential for increased HIV risk is



dependent on, and therefore redundant with other variables such as decreased condom use or increased force. Third, we considered the estimated 80% reduction in probability of HIV transmission from consistent condom use (108) to be sufficient to categorize participants into the lower risk category.

Another consideration relates to our categorization of lower risk partners. While inclusion of this partner type allowed us to account for when condoms are not needed, (77) its weakness is that that youth may have confidently but wrongly denied any risk on their partner's side. Still, in the face of a concentrated epidemic, sexual partners who have never sold sex and have never injected drugs are less likely to have HIV than those who have, due to sometimes large differences in HIV prevalence.

Overall, this indicator was beneficial as it allowed us to include all 306 participants with complete data sets on the final set of predictors into the regression model, thus acknowledging that youth who had never had sex and who had never shared needles were at lower risk for HIV. In studies which measure for example, condom use, only sexually active respondents can be included. Furthermore, in street circumstances, where condom use cannot be assumed to be a purely rational choice (77) due to depression, intoxication, drug addiction, economic pressures, starvation, power imbalances, or in coerced or forced sexual situations, this measure is particularly useful. Also, its dichotomous nature avoided us having to rank combinations of risk, as is needed for multi-level composite measures, as well as avoided the limitations of the HIV risk index, where all behaviors are weighted equally and tallied. Finally, the consideration of interrelated behaviors was useful, as it avoided misclassifications that can occur in simple measures, for example by considering that uninfected monogamous couples who never use condoms, IDUs who never share needles, and street boys who consistently use condoms with all partners, can all be protected from HIV at this point in time. This outcome allowed us to account for some epidemiological complexities of HIV risk, such as prevalence in the population, and probability of transmission that are not captured by simple outcome measures. (77;79)

Finally, some necessary limitations arise with our chosen composite measure of HIV risk. One important consideration is that we relied on the assumption that participants who reported consistent condom use also used them correctly, as we did not assess this specifically. (79) Other limitations, as discussed by Noar, (79) are that multiple item

measures to increase reliability are not used, the risk is not weighted by frequency of unprotected encounters, test-retest reliability is not computed, and social desirability is not measured beyond informal qualitative discussions. Another limitation is that groups with varying actual risk are compiled into one category, for example through the differences in HIV prevalence between CSW and HIV positive persons. Finally, as is often the case in such behavioral risk studies, use of this measure makes it difficult to compare with other studies that use different outcome variables. Still, this measure was beneficial, as it maximized many of strengths of previously used outcome measures that have been empirically identified in the scientific literature.

In conclusion, it should be emphasized that this measure did not attempt to quantify absolute risk, but instead aimed to portray accurate relative risk between the two categories. Without attempting to cover other related risks such as drug addiction or the spread of other STIs, this outcome served as a concise indicator of current epidemiological HIV risk amongst Nepalese street boys.

#### **5.3.2.4 Social Provisions Scale**

Good psychometric properties of the SPS have been demonstrated in previous studies. First, it has been shown reliable both in its subscales (.653-.760 in initial tests) and overall, at .915. (99) Next, factor analysis has shown that the included provisions are both separate and highly correlated constructs, and therefore its benefit in assessing both overall and specific components of social support. (99) Finally, construct validity was demonstrated based on the relationship of this scale to that of loneliness, and discriminate validity tests have shown that it is a separate concept than social desirability, introversion-extroversion, and neuroticism. (99)

Originally, the scale chosen to measure perceived social support in this study was the Personal Resource Questionnaire (PRQ85-II), (74;75;109) as it had been used with Nepalese girls in a study of positive health practices, (101) as well as in studies with street adolescents. (21;60) However, pre-testing of our instrument surfaced that its 7-point Likert was inappropriate to use with our sample who was unfamiliar with its format. Consequently, the SPS was used, and wordings of the possible responses were clarified accordingly. The two instruments share many commonalities. For example, they were both born from the same model, have similar sub-categories and question wordings, account for

the reciprocal nature of social support, and are simply-worded and brief. Therefore, although this scale had not been previously used in the target population, we had confidence that it would also be appropriate to use in the given context.

Further support that this instrument was well-understood and appropriate for use in a Nepalese context comes from the high scale reliability found, despite half of the questions being negatively worded. Interviewers also reported that after they had carefully explained these standardized test sections, participants seem to understand them clearly. Overall, our data provides empirical evidence for the effectiveness of using the SPS in the target population.

### **5.3.2.5 Self-Efficacy to prevent AIDS**

Some strengths of the SEA scale are its inclusion of multiple items and domains, its good psychometric properties, and its concise nature. Initially used with tenth grade students in New York, Kasen's self-efficacy scale showed good internal consistency ( $\alpha = .91$ ), validity, and confirmed the positive relationship of self-efficacy with actual condom use. (90) A somewhat modified version of the scale has been used with female college students, where internal consistency was .86 overall, and .86, .68, and .77 on its respective subscales. (33) The instrument subsequently showed good internal reliability and good convergent and discriminant validity when used with a sample of undergraduate students, and the absence of social desirability bias was demonstrated. (110) Our decision to use the SEA-27 version of this scale came down to its inclusion additional variables, notably those relating to faithfulness and abstinence, which were considered to be relevant to Nepalese culture. When tested amongst Mexican adolescents, the SEA-27 was found to have high internal consistency at  $\alpha = .89$  (.92, .75 and .80 on its respective subscales) as well as discriminatory validity.

Another benefit to this scale is its flexibility as it can either be analyzed by subsections, or can be pooled into a more general measure. This proved to be important in our study, as while overall self-efficacy was not significantly related to HIV risk, self-efficacy to use condoms proved an important protective factor. Although general self-efficacy has been previously found important, it has been more often so in very different population types such as female college students. (33) Self-efficacy is known to be situation specific, meaning that a person can have high or low levels depending on the task and situation he is

faced with. (110) Therefore, in research within the realm of sexual experiences, it can vary by outcome variable chosen. It also varies by gender: while men show more self-efficacy to use condoms, women show more self-efficacy to refuse unwanted sex. (91) In our study, although scores in self-efficacy to use condoms were lower than for refusing unwanted sex, if we exclude the last four questions that were added in the adaptation to the SEA-27, and that do not directly relate to condoms use, this relationship is reversed and is consistent with the literature.

Accordingly, in our study, self-efficacy to use condoms was an important protective factor against HIV risk. This suggests that in our target population, and perhaps in male street youth in general, this sub-category is a better predictor of HIV risk than either of the other two subscales, and than overall self-efficacy. Many other studies have also incorporated self-efficacy to use condoms (including obtaining them and using them correctly at each sexual encounter) specifically into their studies, and have also found it significantly correlated with various measures of condom use, as well as to a general HIV risk index. (26-28;31)

Our results suggest that although participants may have felt relatively more able to refuse unwanted sex or to ask about a partner's sexual or drug history, this confidence did not translate into actual safer sex behaviors. One explanation for the first finding is that if these boys as a whole did not perceive the included sexual situations as unwanted, those who planned on engaging in protective behaviors may have planned to use condoms over refusing sex altogether. For the second, although participants may have felt able to ask about their partners' histories, they may not have done so if they did not feel that it was important, or that it would affect their actions.

Overall, use of the SEA-27 in this study appears to have been successful. Both in pre-testing and in the final data set, its alpha Cronbach level was relatively high, suggesting that the translation was acceptable and that it was an appropriate measure to use. Further support comes from our found positive correlation between self-efficacy to use condoms and actual condom use. In conclusion, our results emphasize the important role of self-efficacy to use condoms as the most specific and important self-efficacy indicator in explaining street youth's risk for HIV.

### **5.3.3 Interview procedure**

Some aspects of the interview procedure design warrant attention. First, the design of interviewers working in teams of street youth with students was implemented to ensure their safety, to minimize power discrepancies between researchers and interviewees, to facilitate data collection, to ensure organized and broad coverage of Kathmandu, to encourage the interaction of street youth with students, and to support the street youth's own involvement in prevention programs. Second, the decision to carry out many of the interviews in the morning and evening was taken following suggestions from the pilot study, as at these times the potential respondents were most motivated to participate, and were not working. This suggestion was confirmed by the collaborating NGO. Finally, the compensation provided to participants was also decided in collaboration with SathSath, was determined to be appropriate in type and magnitude, and was in-line with the overall purpose of the study of improving health. We felt that a small compensation was important in order to thank participants for their voluntary participation and for any potential lost wages from the time they spent with us.

From the pilot study through the interview phase, the overall reaction of the potential respondents was very positive, due to SathSath's good reputation amongst Kathmandu street youth. This was extremely beneficial as it resulted in a relatively low refusal rate for participation, and also likely increased reliability of our data, as participants were motivated to complete the more personal sections of the questionnaire openly and honestly.

### **5.3.4 Excluded interviews**

An account of why certain interviews were retained or excluded is included here. First, of the interviews turned in, three were excluded as they had large sections of missing data. There were also four interviews where the respondent chose not to respond to a particular section (one for each of meeting financial needs, ranking of sexual health, number of sexual partners, and perceived peer norms). These interviews were retained for further analysis, due to lacking only a small percentage of information.

For the psychosocial measures of sections 3 and 4, a reliability analysis performed after the first week of interviews showed that while overall reliability was good for both the

SPS and the SEA-27, analysis by group surfaced that due to a misunderstanding of the SPS, nine interviews that had been conducted by one researcher showed very low reliability. Two of these were redone and were included in the final analysis, while seven participants were not found, and their interviews were excluded.

### **5.3.5 Quality of data**

For questionnaire parts 1, 2 and 5, quality of data was examined by cross-analysis of specific questions, in order to identify conflicting answers. The interviews appeared to be of high quality, especially as researchers became increasingly familiar with the questionnaire, as any potential conflicting answers, suggesting for example misunderstanding on the part of the respondent, could be immediately corrected. One notable theme, however, is that even when asked about their lifetime experiences, participants seemed to respond with respect to their current situations, for example with respect to meeting food needs.

In this retrospective self-report study, where information is unverified, we risked having some reporting bias in our data. However, the literature has suggested that both students and street youth can be reliable sources of information. (22;31) This risk was minimized in our study by using trained researchers who had spent time building trust with participants, and who attempted to make street interviews as private as possible. Still, as expected in studies of sensitive topics, some underreporting appeared to be present. Further analysis of interviewer type and location, while also controlling for age, suggested that this underreporting occurred more often when interviews were performed by street youth compared to students. Underreporting may also have been more common in interviews performed at NGOs compared to from street locations, although this seemed to be explained by age. Overall, our interviewers stated that for the most part, youth did not appear embarrassed, and were forthcoming with their responses.

### **5.3.6 Sample obtained**

Due to the heterogeneous distribution of risk amongst street-based youth in Nepal, this study aimed to be geographically representative of street youth within the city, while simultaneously capturing one of the highest risk sub-groups of this population.

The first goal was approached systematically, through the aforementioned social mapping analysis, in order to minimize the difficulties in systematically sampling

populations of street youth. (22) Because of the mobility of the youth, including their lack of stable domiciles, as in other similar studies, (14-23) we were forced to employ non-random sampling. Random sampling in studies of homeless youth has been described as “extremely difficult and costly at best...and is perhaps impossible.” (22) We minimized this bias through this social mapping analysis which allowed us to weight number of interviews taken by expected concentrations of youth in given areas. The figures obtained from this analysis were used as a guide, and were made flexible for two reasons. The first was that the KAPB study had been performed two years ago, and some of the areas where street youth congregated had changed. The second was that their mapping had been performed for a younger sample of youth. Our area scouting days during the pilot study were useful for this, as interviewers found that some locations had different concentrations of street youth than expected, as well as discovered new areas that had not previously been identified. Based on the final sample, the number of interviews we obtained from Kalimati, Baneshwor and Putalisadak were in-line with our expectations. The smaller number of street youth recruited from Basundhara was also consistent with our expected number, and is therefore likely a representative proportion. However, more interviews than the expected 17% were obtained from Patan, which included a higher than expected concentration from the old town of Patan Durbar Square. This increased number is not likely due to the older age group of our sample, as significantly more younger youth were interviewed here when compared to all other areas combined. However, as more youth from this area reported leaving home less than two years ago, the observed difference may be due to actual recent changes in concentrations. In addition to these proportions, all of the sub-areas from which we obtained ten or more interviews were consistent with those found to have a higher concentration of street youth in the previous KAPB study, with the exception of Patan Durbar Square, as previously discussed. Based on the above facts, we infer that our sample is geographically representative of street youth in Kathmandu, however it is acknowledged that this representativeness may not extend to other parts of Nepal, or to other countries.

The second goal, to capture a high-risk sub-group of Kathmandu street youth, was achieved primarily through the prioritization of interviewing youth from street locations. Although it was possible for us to recruit from local NGOs, as shown in previous studies, (14;18;20) it was decided that recruiting the majority of youth from street locations would

be more likely to capture those with higher behavioral risk for HIV. Through this procedure, although we risked over-representing youth that do not use NGO services, and therefore being less representative of the around 30,000 street-based youth in Nepal, our strength is that we developed a profile of the more un-reached, higher risk sub-group of street-living youth in Kathmandu.



## **Chapter 6 - Recommendations**

### **6.1 *Extension of the current research***

#### **6.1.1 By gender**

Gender differences have been found in populations of street youth such as males being on average older, away from home longer, and having less family contact. (14;16;19) They are also more likely to be sexually experienced, to have more sexual partners, to engage in survival sex, to engage in anal sex, to use drugs, and to use condoms more often. (14;16-19) However, street girls face more problems of discrimination, exploitation, physical and sexual abuse, and decreased economic opportunities. (13;34) A Nepalese study found that six of eight street girls interviewed had ever been sexually abused, and discussed how this experience often led them to initiating sex work for sustenance. (87) The literature has shown powerful effects of women's abusive histories on increased future risk on the streets, (88) and has demonstrated associations of poverty and homelessness with coercion. (48;59) Females also have increased susceptibility to infection, and therefore greater physiological risk for HIV. (50)

Although an estimated 13% of Kathmandu street youth are girls, they tend to be more mobile and less visible on the streets, for example by disguising themselves as boys or by only coming to the streets at night. (11;13;34) Based on our limited quantitative data, on case studies with ex-street girls in rehabilitation centers, on meetings with NGO key informants, and on prior studies, we expect that a very high risk for HIV also exists amongst female street youth in Kathmandu. Recurring themes were sex work and sexual exploitation. For example, as congruent with finding from the aforementioned Nepalese study, (87) these girls expressed their many difficulties in returning home after time on spent on the streets, as their reputation was questioned, and as they were accused of having been involved in sex work.

Although it was not possible for us to include a representative sample of females in this study, this sub-population is at high risk for HIV, and needs to have facilitated medical care for disease management, as well as for their additional reproductive problems including unwanted or high risk pregnancy and lack of antenatal care. (14;34)

### **6.1.2 By qualitative methods**

Behavioral determinants are influenced by one's personal understanding of sexual meanings, intentions, situation-specific and general expectations and rules, pressures, perceived vulnerability, and perceived outcomes. (49) Therefore an important follow-up study would be to include a more detailed qualitative component. Qualitative methods have been previously used with street youth, for example, as one American study employed a triangulation of methods including focus groups and individual in-depth interviews to explore how street youth perceive their own connectedness, loneliness and well-being. (68) This strategy was useful in developing a base of understanding, to give voice to the population, and to clarify findings. In Nepal, focus group discussions among street-based youth were useful in illustrating, personalizing, and interpreting quantitative data, as well as in tailoring potential interventions. (11) For example, it yielded the concept that females were often the ones requesting condom use, and that CSWs were more successful than other street-based girls in persuading their sexual partners to use one.

In our study, important themes that arose from our quantitative results could guide focus group discussions with girls, with IDUs, with those with high and low risk for HIV, and with those with high and low social support or self-efficacy. Thus, we could develop a more thorough understanding of important concepts, such as gender, the role of sexual abuse, time perspective, and risk clustering.

### **6.1.3 By inclusion of further variables**

First, perceived vulnerability may be important for future research as it may be a prerequisite to safe sex behaviors, and like self-efficacy, it could help bridge the gap between knowledge and behavior. One's personal perception of the seriousness of a health threat, of his vulnerability to it, and of his ability to reduce his risk to it has been associated with actual and intended behavior change. (53) Unfortunately, due to reasons such as denial of risk and responsibility, this perceived risk is often lower than actual risk, even in higher-risk groups. (25;33;53) As people often identify their own risk based on their perceptions of others', and because they perceive themselves optimistically in this comparison, this lack of acknowledgement to one's personal risk inhibits the adoption of safe sexual behaviors. (31;84) Still, as the relationship between perceived vulnerability to HIV and risk behaviors

remains unclear, (27;28;31;33), the clarification of its role amongst Nepalese street youth may be important.

Second, future time perspective is relevant, based on our data, as youth seemed to conceptualize some of our lifetime questions as more recent ones, and as they prioritized immediate enjoyment over long-term consequences. (66) The literature has shown FTP to be positively correlated with social support, as well as with positive health practices including fewer sexual partners, (21;66) therefore interventions for one may have beneficial effects on the other, and ultimately on exposure to HIV. For example, teaching youth of the consequences of their present actions and increasing their feeling of control over their futures may lead them to have positive visions for them, and could concurrently result in their avoidance of risky situations.

Finally, self-esteem is related to self-efficacy, and has been described as a prerequisite for adopting healthy behaviors. (84) Low self-esteem has been associated with earlier sexual debut and an increased number of sexual partners, possibly due to a search for external affirmation. (53) Related to condoms, if one is overly concerned with what his partner thinks, he might be embarrassed, and less likely to suggest or demand its use in sexual situations. (53) However, this relationship is challenged by other studies that have shown that lower self-esteem is actually protective of risky sexual behaviors, (84) which might related to the risk of rejection involved in initiating sexual activity altogether. The role of this variable as a risk factor in Nepalese street youth warrants attention, as congruent with the above proposed factors, its modifiable nature holds potential for intervention.

## **6.2 Recommendations for interventions**

### **▪ Directly reduce risky sexual behaviors**

- Risky sexual behaviors including early sexual debut, inconsistent condom use, high risk and multiple partners, and higher risk sex types should be targeted by proven intervention strategies that do not rely on assumptions met only by in-school and at-home youth, and that are therefore sensitive to street culture.
- In Baneshwor, due to low levels of overall condom use, the goal should be to increase this with all partner types and in all sexual situations.

- In Putalisadak, the more reported consistent condom use reported here with commercial sex partners should be built on, with the goal of extending this practice to youth's encounters with non-regular partners.
- **Extend coverage of street outreach programs**
  - **By geographical location:** NGO outreach should ensure broad geographical coverage of Kathmandu, including to its northern quintile, where although there are less street youth overall, these ones may be at disproportionate risk for HIV, and where current NGO presence, for example near Balaju Bus Park, is scarce.
  - **By sub-population:** Interventions should be specific to relevant subgroups. For example, older boys, who had more sex partners and a greater likelihood of using injection drugs, should be targeted, while younger boys should also be reached to avoid them from repeating this trend. As risk behaviors cluster together, while being mindful of stigma, focusing on certain groups of youth, as opposed to targeting a particular behavior, could be an effective strategy. If these youth do not use NGO services, they may require the provision of on-street interventions.
- **Facilitate availability of services and care for IDUs**
  - IDU should be recognized as the most important window for protecting Nepalese street youth from HIV, and all interventions need to make sure to include this most vulnerable sub-group of youth who are unlikely to seek help themselves.
  - A greater understanding of how drug use of any kind is related to risky sexual and injecting behavior, as well of the potential progression from commonly used drugs, such as glue, to injection drugs, deserves attention. Prevention of drug use in general should be prioritized.
  - Harm reduction services, such as needle-exchange programs, as well as detoxification, and inclusive rehabilitation should be effective, non-judgmental, free of charge, and readily available for substance-users.
  - Drop-in centers and shelters should continue to provide a safe place for IDUs both day and night, so that those who are trying to stay off drugs have a supportive environment to stay clean.
- **Develop a contextual understanding of and prevent sexual abuse:** Awareness in the community as well as amongst the children themselves needs to be developed, while denial must be combated. Affected children need to feel comfortable that they can come forth with these issues and to have facilitated access to confidential

counseling and treatment. Finally development of and advocacy for children's rights, as well as implementation of enforced legal protection are vital.

- **Ensure basic needs are met:** Street youth's need to rely on illicit means of support should be eliminated. This might be especially important in Kalimati, where youth were more likely to have left home longer ago, to sleep on the streets, and to have experienced victimization. It should be done in a sustainable way, such as through the practical skill development, and through programs such as small business start-up provisions.
- **Prevent alienation from traditional society:** Interventions should be in place to prevent street youth's progressive alienation from traditional social life, and consequently an increasingly difficult later reintegration. For example, programs synchronized with those for the general population of youth can ensure that street youth continue to be exposed to peers, norms, and values of traditional society.
- **Avoid the normalization of risky peer norms and promote positive ones**
  - A deeper understanding of risky peer group norms in their specific contexts should be qualitatively developed, as well as a greater understanding of the dynamics between 'group leaders' and the younger youth in the peer groups. For example, whether the leader's influence is passive, and results from younger boys modeling his behavior of older ones, or active, for example through peer pressure.
  - This understanding should be used towards molding risky norms over time towards safer sex attitudes and practices. If the group leader is knowledgeable and supportive of safe behaviors, his opinions and attitudes are likely to influence those of his younger peers.
  - This recommendation may be especially relevant to the younger population of street youth in Patan, as it may simultaneously result in preventing their integration into the street economies, their alienation from society, and their progression of non-injecting drug use to IDU.
  - Also in Baneshwor, this recommendation is essential in overcoming the overall significantly lower levels of condom use in this area.
- **Sustain supportive family relationships**
  - Youth who wish to be in contact with their families should be assisted with the logistics of, and be emotionally supported to do so.

- Depending on the individual circumstances, some younger and more recently homeless youth could be reunited with their families before becoming involved with the marginal, deviant, and other higher risk aspects of street life.
- **Build connectedness to NGO workers**
  - It should be researched which modifiable factors lead to connectedness between street youth and NGO workers, for example with respect to informal socializing or mutual respect and shared characteristics and interests between them. (104)
  - Outreach work should pursue continuity of contact between NGO staff and higher-risk youth, where the same worker visits them regularly, and where the two develop a personal relationship, even if it is in the absence of service provision at that time.
  - The role of NGO workers as positive role models and community mentors should be emphasized.
- **Develop the many facets of social support**
  - Having a facilitated time and place for leisure time, possibly beyond the walls of the NGO facilities, and when it is convenient for the youth, should be available. Promoting social integration of youth with others with whom they can enjoy safe and similar activities, for example forming groups that play sports, watch movies or play cards together, should be pursued
  - Attachment should be developed through close relationships between youth and NGO staff that provide them with a sense of emotional security and well-being.
  - Concurrently, youth should be protected from the community relationships which may foster this feeling but in fact leave them vulnerable to exploitation and abuse.
  - A feeling of worth and competence should be instilled in youth. This can be, for example, through his participation with NGO programs and interventions or where his perspective and skills are respected and recognized by staff.
  - Peer education strategies, such as older street youth being trained as responsible mentors could instill feelings that others need them one to care for them.
  - Youth should feel assured that in addition to practical services, they have an available trustworthy alliance with a responsible adult who they can depend on for guidance in case of a problem or emergency. If this access is facilitated, they might be less likely to procrastinate help-seeking until their situations are severe.

▪ **Improve self-efficacy to use condoms**

- Exploitation, economic desperation, and other situations which can make youth feel out of control of their own sexuality should be overcome
- Youth should be made aware of their true risk for HIV, for example through peer education by other HIV-infected street youth.
- Youth's own understanding about which situations his ability to protect himself sexually is lessened should be developed, for example in the context of drug or alcohol use, as then he is empowered to either avoid such situations altogether, or can prepare himself for and practice how he will react if they occur.
- Videos where people demonstrate assertiveness and confidence in various sexual situations could be presented, and youth could practice by role-playing with peers.
- Youth who are not yet sexually active should be included in these exercises to promote a positive view of condom use, and to confirm their confidence of being able use one properly even in a difficult first sexual situation.
- Acceptance, normality, and support for condom use within the peer groups should be promoted, for example by getting through to peer group leaders.
- Social skills could be developed so that youth are more able to make their own choices and can resist negative pressures and influences.
- Skills in critical thinking, decision-making, communication, negotiation, and conflict resolution should all be practiced.
- Self-esteem and a feeling of worth should be built up, as well as the promotion of a long term perspective that gives youth hope for the future.

## Chapter 7 - Conclusion

Nepalese street adolescents live in an environment that contextualizes high risk behavior. In our sample, 30% had no contact with their families and 96% were out of school. Seventy-two percent slept on the street or in another public place, 55% reported spending time on the streets for more than five years, 70% had had difficulty meeting basic food needs, and 46% engaged in higher-risk activities with their peers. This group represents one of the highest risk subgroups of street-based youth in Kathmandu. Accordingly, these boys are at high risk for HIV as 64% of sexually active respondents had ever had a known HIV+, IDU, or CSW partner, 56% had ever had anal sex, survival sex, forced sex, or sex while intoxicated, and 78% had had at least one of any of these. Only 30% and 13% reported consistent condom use with CSWs and non-regular partners, respectively. Twenty-three percent of youth had ever injected drugs, and of these, 65% had shared needles.

As hypothesized, few youth in our study expressed connectedness to parents (12%) and NGO staff (26%), but 70% maintained close ties with their peers. Although few perceived that their peers had had survival sex, 56% believed that either most or all of their peers had had sex, while only 27% believed that the same proportion used condoms. Levels of social support and self-efficacy were relatively low.

In regression analysis, using a composite measure of HIV risk as the outcome variable, area interviewed, older age, a history of sexual abuse, longer time since leaving home, meeting food needs, and higher risk activities with peers all remained independent predictors of HIV risk when other variables were controlled. Modifiable psychosocial variables were also important. Connection to a community worker, the perception that few of one's peers had had sex, more social support, and greater self-efficacy to use condoms proved important protective factors.

This study was the first of its type to demonstrate the importance of modifiable psychosocial constructs in independently predicting behavioral risk for HIV in Nepalese street adolescents. It surfaced important themes for further investigation, with respect to the roles of gender, history of sexual abuse, risk-clustering, and future time perspective in street youth's risk for HIV.



Recommendations from this study include ensuring building awareness of and protecting street youth from sexual abuse and exploitation, preventing their alienation from traditional society, and avoiding the normalization of risky peer norms while promoting positive ones. Connections between NGO workers and street youth through their roles as community mentors should be encouraged. Social support should be improved through facilitating safe activities amongst street youth, and by openly recognizing their competence and worth. Finally the development of skills for self-efficacy to use condoms should build understanding of potentially difficult situations and prepare one for them. This is possible through development of decision making, communication, assertiveness, negotiation, and conflict resolution skills, which can all help him to resist negative pressures.

These socially targeted recommendations are contextually sensitive, and based on our results, have the potential to meet our study's ultimate goal: the reduction of Nepalese street youth's exposure to HIV.

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## Annex I- Ethical clearance letter from REK Norway



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Your ref:

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**2.3. S-07249a Psychosocial predictors of HIV/AIDS risk behaviors in Nepalese street youth  
[2.2007.1451]**

Project Manager: MD Ph. D. Bernadette Kumar, Department of International Health, University of Oslo  
M. Phil. Student Alison Homer

We refer to your letter dated 3 August 2007 with the revised information letter and declaration of consent enclosed.

The committee accepts the explanatory response.

The committee has no comments on the revised information letter with declaration of consent.

The committee gives its approval to the implementation of the project.

Best wishes for the project!

Yours sincerely

Kristian Hagestad  
Chief County Medical Officer, Spec. of Public Health  
Chairperson

Jørgen Hærdang  
Secretary

Copy to: M. Phil. Student Allison Homer, Institutt for allmenn- og samfunnsmedisin, UIO